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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JANUARY 4 1941

PRIDE AND PREJUDICE IN THE TREATMENT OF CANCER*

BY

Sir ALFRED WEBB-JOHNSON, C.B.E., D.S.O., T.D., F.R.C.S., Hon. F.R.A.C.S., Hon. F.A.C.S.

Surgeon to Her Majesty Queen Mary; Vice-President of the Royal College of Surgeons; Surgeon to the Middlesex Hospital

In eighteen hundred and thirty-three William Wood Bradshaw qualified as a Member of the Royal College of Surgeons of England. He practised at Andover and later at Reading, and was well thought of by the Council of our College, for in 1854 he was elected to the Fellowship without examination, under Clause I of the Charter of 1852. According to various biographies Bradshaw was a student at the Middlesex and Westminster Hospitals, but the only record we possess at the Middlesex is a register which shows that in 1840, seven years after his qualification, he was admitted as physician's pupil.

By the time of Bradshaw's entry at the Middlesex Hospital Charles Bell, the founder of the Medical School, had left on his appointment to the chair of surgery in Edinburgh, but in Erasmus Wilson's history of the hospital we read of others who were on the staff. Among them were Thomas Watson, later President of the Royal College of Physicians, and James Moncrieff Arnott, later President of our College and the benefactor who endowed the Arnott Demonstrations. Francis Hawkins, another member of the staff, was Registrar of the Royal College of Physicians, and his brother, Caesar Hawkins, became President of our College. William Macmichael, the author of the delightful *Autobiography of the Gold-headed Cane,* had recently died, but he had awakened renewed interest in the venerable College of Physicians by directing attention to its past history and to the achievements of the famous men who had been connected with it. Among the other surgeons were Herbert Mayo, who had claimed priority over Bell in his work on the spinal nerves, and Alexander Shaw, Bell's brother-in-law, who was later a Member of the Council of the Royal College of Surgeons. During his time at the Middlesex Hospital, therefore, Bradshaw would be deeply imbued with respect and affection for the two Royal Colleges.

Like many another Middlesex man Bradshaw was a man of piety, as shown by his little book, *Thoughts on the Lord's Prayer.* Like many another Middlesex man he was blessed with a devoted wife, who married him in spite of the fact that her first husband, a rich jeweller of Andover, had jealously tried to prevent her marrying another by leaving his money away in case she re-wed. She showed her devotion to Bradshaw by risking this legacy; together, they showed their sound common sense by buying the reversion for a sum down. In her will Mrs. Bradshaw gave further evidence of her regard for her husband by founding in each of the two Royal Colleges a Lecture to perpetuate his name. This combination of wifely devotion with the "sweet" or "elegant simplicity of the three-per-cents" ensures that each year someone shall occupy this position. In the course of time the appointment of Bradshaw Lecturer has become the highest honour in the gift of the President of our College. I very deeply appreciate the confidence shown in me by entrusting me with this honourable task.

My choice of subject was influenced by various considerations. In the first place, even at the time that Bradshaw came to Middlesex a special department for the investigation and treatment of cancer had been established there for nearly half a century. Bradshaw was also a student of Westminster Hospital, and if he were here in spirit to-day he would find his two hospitals among the foremost in the fight against this dread disease. Moreover, Bradshaw was a general practitioner, and it is on the general practitioner that we rely for the recognition of the significance of symptoms which may lead to the early diagnosis of this disease.

My own path has led me into association not only with the Middlesex Hospital, whose special Department for Cancer Research and Treatment dates from 1792, but also with the Christie Hospital in Manchester, which was founded just a century later. To this latter hospital, now combined with the Holt Radium Institute, I have returned several times, and have seen some of the most successful results of the modern treatment of cancer in certain situations.

This is the fourteenth occasion since the Bradshaw Lecture was founded on which cancer has been chosen as the subject for discussion in our College. It is, however, thirty years, or the conventional length of a human generation, since Sir Alfred Pearce Gould attempted a general survey of the problem. He saw grounds for hope in the fact that in many instances malignant tumours had been observed to disappear under radiation treatment. Towards the end of his lecture he exclaimed, "Watchman, what of the night?" It seemed to me that the circumstances of the present time demanded that someone should pay heed to the answer of the watchman in the Book of Isaiah: "The morning cometh, and also the night: if ye will enquire, enquire ye: . . ." An inquiry into the results of treatment was indeed a matter of urgency. Owing to the war many radiotherapy departments have been partly out of commission and the expert staffs depleted. Large numbers of the population have

* The Bradshaw Lecture delivered before the Royal College of Surgeons of England on November 27, 1940.

been dispersed, continuity of treatment interfered with, and the follow-up of patients made difficult and unsatisfactory.

When I embarked upon my inquiry I found an undercurrent of talk—wild uninformed criticism, a tendency to exaggeration of failures and overstatement of successes. Surgeons and radiotherapists were often in disagreement. There was indeed an atmosphere of "pride and prejudice," frequently the result of "first impressions," which, curiously enough, was the title originally chosen by Jane Austen for her novel. If the pendulum has swung too far away from excisional surgery towards radiotherapy, it is well that it should be so stated in the Royal College of Surgeons. If the swing of the pendulum has been justified by results, it is well that the glad tidings should be welcomed in the headquarters of British surgery.

The present position is that in almost every part of the body except the stomach and intestines the treatment of cancer has become a radiosurgical problem. In the case of the stomach and intestines anatomical conditions are about as favourable as they could be for excisional surgery, provided the disease is diagnosed early. In the stomach excellent results are achieved in early cases. In the streptococcal path of the colon success attends the patient surgeon who will walk delicately like Agag, follow in the footsteps of Paul, adopt the ingenious methods of Seton Pringle, or observe the teachings of our newest Honorary Fellow by conforming to the Devine precepts.

X Rays and Radium

The practice of radiotherapy has grown and is growing at a remarkably rapid rate. This is shown by the increasing number of patients who apply for treatment at the radium centres of the Radium Commission and the Medical Research Council. At the Medical Research Council centres the numbers increased from 1,016 in 1930 to 5,698 in 1938, and in the latter year 60% of patients were having radiation treatment alone—the proportion in general hospitals being 45.5% and in special hospitals as high as 75.9%.

Although man has an inveterate instinct not to confide his weight to a branch until he has tested it, yet in radiotherapy we have for years been using weapons about which we still have much to learn. Terrible mistakes have been made, but there was no help for them. The newfound weapons, however dangerous, simply had to be employed on actual patients, even in an experimental way, because the possibilities of their doing good were so immense. It was one of those instances when, as Trotter said, "In matters that really interest him, man cannot support the suspense of judgment which science so often has to enjoin. He is too anxious to feel certain, to have time to know." It was impossible to maintain an attitude of suspended judgment indefinitely in a matter which might mean life or death to so many—all crying for immediate relief.

When the effects of *x* rays and the gamma rays of radium disturbed established ideas it was inevitable that we should become more and more dependent on more and more division of labour. A division of labour is necessary for the advancement of any science—how much more so in the case of a subject like radiation therapy, which touches so many sciences! As Kipling said, "Isn't it likely that the multitude and significance of the revelations heaped upon us within the past few years have made men in self-defence specialize more and more narrowly? Haven't we been driven headlong to abandon our conceptions of life, motion, and matter? And isn't it human that in the upheaval men may have carried off each his own cherished possession and camped beside it—just as refugees do after an earthquake?" (*A Book of Words*—Speech to the Royal Society of Medicine, November, 1928). So it has happened with the physicist and the radiotherapist, with the result that there is a danger of the surgeon's losing touch.

By specialization, however, the knowledge of what radium and *x*-ray treatment will do has steadily increased. But, as the claims of the beneficial effects of radiotherapy have grown, wiser surgeons have asked that decisions should be deferred and judgments suspended until time had shown whether those benefits were lasting. Surgeons would be failing in their duty if they lightly laid aside the knife or restricted the scope of their operations unless and until they were satisfied that reliable substitutes for radical operative treatment had been made available.

Unfortunately some operations for cancer, although crowned with a large measure of success, entail a heavy primary mortality, and in some cases the resulting mutilation is serious. Radiotherapy acts with greater delicacy, for cancer cells are generally more sensitive than normal cells. The limited tolerance of the skin together with the fact that neighbouring parts may be highly sensitive requires that those who are to use these powerful and dangerous weapons must be very thoroughly trained. Mistakes of the past, now being avoided, showed that in unskilled hands much damage could be done by radiation treatment, and that, like other serious undertakings, it is "not to be enterprised, nor taken in hand unadvisedly, lightly, or wantonly . . . but reverently, discreetly, advisedly, and soberly."

Experimental Cancer

Before considering the results of treatment it is well to call to mind the present state of our knowledge, for this is an essential starting-point for further developments. We still do not know the cause of the disease we are striving to cure, but the results of research lead to the conclusion that there may be a combination of three factors in the induction of an experimental cancer. First, there is an inherent susceptibility or lack of resistance in the individual. Secondly, there may be an irritant, or non-essential, factor: one example of this is the characteristic reaction produced in the skin by the application of a chemical carcinogen, and another is the change produced in the breasts of susceptible animals like mice by overstimulation with large doses of natural or synthetic oestrogenic substances. And, thirdly, there may be a virus as a causative agent, and this may or may not be an essential element.

Research on viruses leads to the very meeting-place between animate and inanimate matter—to the threshold of life itself; for some known viruses seem capable of passing from an inanimate crystalline form to an animate existence. Ideas as to the nature of viruses are conflicting. Some observers regard them as extraneous disease-producing entities, while others maintain that viruses are formed from the protoplasm of the animal cell. Some workers doubt the virus theory and maintain that chemical agents may be sufficient by themselves to induce cancer in a susceptible animal. But, in support of a virus factor in cancer, it must be remembered that tumours have been transmitted from one animal to another by means of a cell-free filtrate, and also that there is evidence suggestive of the development of antibodies (neutralizing and agglutinating immune bodies) in the blood of the host, which raises hopes that a way may be found to stimulate the process of natural resistance.

The occurrence of some cases of experimental cancer is definitely associated with external influences. This is made clear by the demonstration that cancer can be

induced almost at will, that the rate of induction by an extraneous carcinogen can be delayed or accelerated, that the incidence of mammary cancer of hormonal origin can be influenced by environment, and that even the incidence of susceptibility can be modified, for it seems to depend more on some factor in the milk received from the mother or foster-mother than on parentage. In experimental cancer many of these causative factors may be brought under control.

The Problem in Man

Passing from mice to men, there are grounds for believing that the incidence of cancer in the human subject may also be governed by an inherent susceptibility or lack of resistance and, possibly, also by a virus. But in addition to these causes, which we cannot at present control, general environmental factors, such as occupation or social conditions, may play some part in the causation, and there is ample evidence that totally extraneous influences affecting the skin or the respiratory, urinary, or alimentary tract are often local non-essential causes. These extraneous influences may be subject to control.

Experimentalists and clinicians, however, are alike faced with the fact that, whatever causes may combine to produce cancer, once the cancerous cell has developed the malignant growth continues, in spite of the withdrawal of any remote non-essential cause. Various lines of research suggest many possible lines of treatment, but in the present state of our knowledge we can only treat the local manifestation of the disease.

We have not the requisite knowledge to guide us in controlling susceptibility or increasing resistance, nor do we know any general treatment which will arrest the disease process when it has begun. By way of prevention we can, however, do much to exclude extraneous influences which may be remote causes, and we can treat local and general conditions which are known to be frequent precursors of cancer. By way of cure we can attack the cancer locally when it is manifest. This can be done by surgical excision, to which there are limits, or by endeavouring to check an otherwise irreversible process by radiation, a method the full possibilities of which have yet to be learned. There is still an enormous amount of research to be done in radiotherapy, but thanks to the physicist we have now a standard unit of dosage, and with the help of the physicist we can direct the rays accurately and determine the exact dose received by the skin, by the tumour, by the surrounding tissues, and by the individual. But the same dose can be varied in many ways—e.g., in intensity, in time spacing, and in the source of radiation. Moreover, in addition to the physical variables we still have to consider the problem of sensitivity and the different effect produced on the same cells according to the activity or otherwise of mitosis, or the state of nutrition of the cells and, possibly, of the individual. There are favourable times and conditions for radiation treatment, and it is anticipated that if it could be spaced so as to attack the tumour always at times of high radiosensitivity, and to avoid times of high radioresistance, better results would be obtained.

Morbid Histology

The importance of the state of cell activity and its relation to treatment and prognosis has awakened renewed interest in the study of morbid histology, which is by no means so closed or finite a subject or so unprofitable a line of research as many have imagined. The relationship between histological appearance and prognosis has been demonstrated in all the squamous-celled carcinomata, in cancer of the breast, cervix uteri, intestines, and rectum. But the histological grading of tumours, based on the extent of differentiation of the cells and the degree of cell activity, in addition to aiding in the assessment of prognosis may help in deciding on the best line of treatment. If a specimen has been obtained for biopsy the pathologist may have to accept not only the task of exact diagnosis but the additional responsibility of sharing in the decision whether the tumour should be excised, or whether surgical intervention may precipitate disaster; or whether it is of the type that is likely to react favourably to radiation. If a specimen removed by radical operation is submitted for an opinion the pathologist, after careful examination of the whole specimen and after histological grading, may have to help to decide not only the prognosis but also whether post-operative radiation is indicated. It is by these and similar exact scientific investigations in the study of each individual case that results of treatment are likely to be improved; for, as Sir James Paget said in 1882 in the first Bradshaw Lecture ever delivered in our College, "Better treatment will follow better diagnosis, and better diagnosis will certainly follow a more exact pathology."

Early Diagnosis

Morbid histology is one of the important aids not only to exact diagnosis but also to early diagnosis, which is essential to success in cancer treatment. The study of histology may help to reveal, as Paget pointed out, "the time and manner of the first appearing in the case of many diseases."

The master key to success in the treatment of cancer is early diagnosis, and the first step towards this is to secure the opportunity to examine the patient. We must therefore endeavour to remove the haunting fear of the disease. Patients must be brought to realize that cancer is curable and thus led to seek advice without delay. The fact that there is an alternative to operative treatment is a help in leading patients to seek advice early, and indeed has already led to this happy result, as the experience of some radium centres proves.

Now that therapeutic apparatus is so complicated, so costly, and so quickly out of date institutional treatment will become more and more necessary. This will help to dispel the atmosphere of secrecy such as prevailed in the case of President Cleveland when, as dramatically related by Keen of Philadelphia, surgeons were smuggled on to the President's yacht lest during the bimetallism crisis in the United States there should be a financial panic if it were known that he had a malignant growth. (W. W. Keen: *The Surgical Operations on President Cleveland in 1893.*)

The next important step to early diagnosis is skill in clinical investigation, and great advances have been made in methods of examination which can help towards this end.

Results of Treatment

I now propose to attempt a survey of my inquiry into the results of treatment. The opinions I have arrived at must be considered as personal ones. At the same time I have attempted to reach them with a full sense of responsibility, for a Bradshaw Lecture may be vested with some authority, and may be taken to represent an *ex cathedra* statement of the present position. I have endeavoured to avoid bias and to hold a brief neither for surgery nor for radiotherapy, but only for the patient.

In assessing results I have confined myself to a study of those achieved in this country, and as a rule have drawn comparisons between the best obtained by surgery and the best obtained by radiation therapy. I have made no attempt to compare the results of different methods of using radiation as a therapeutic agent; for although it is claimed that methods of treatment have been largely stan-

dardized, yet it has to be admitted that ingenuity in inventing techniques has been so prolific that the different combinations of methods of treatment may be called legion, for they are many. In fact, in a recent report of the Radium Commission it was stated that 110 different combinations had been distinguished for the tongue, 53 for the floor of the mouth, 86 for the breast, 56 for the lip, and 66 for the uterine cervix. Truly a bewildering variety! Technique and clinical judgment count for as much in radiotherapy as in surgery.

The introduction of a new radiological method is likely to lead to excessive enthusiasm, but unfortunately this is often damped by the sobering effect of a cold douche of statistics showing results some years afterwards. Although in the last analysis it is numbers that count, statistics are often misleading and are open to abuse. The study of cancer statistics is very difficult, for there has been no uniform system of keeping records or estimating results. Even when statutory and other bodies have collected information they have acted independently and, as if inspired by some imp of mischief, have adopted different methods of arriving at survival rates. For statistical study it is essential to have uniformity of method. But even when cancer statistics are compiled on identical lines they are often not suitable for comparison, for cases may differ in character in different clinics and there is a personal factor in classifying cases into stages or into operable and inoperable. I have attempted, therefore, to compare results statistically only when numbers, conditions, class of case, and other factors could be reduced to a common denominator and a fair comparison be made.

The Skin

Cancer of the skin is essentially a local disease when first manifest, and even in cases of epithelioma the lymphatic glands are not involved as a rule until the disease is far advanced. Over 90% of 800 cases analysed by the Radium Commission had no glandular metastases when first seen. It is interesting to note, however, that a superficial skin cancer, whether basal-celled carcinoma or epithelioma, is often an outward and visible sign of an inward invisible delitescent and unexplained tendency, for it is by no means uncommon for patients with skin cancer, particularly rodent ulcer, to develop carcinoma elsewhere. In the Radium Commission analysis of 2,534 cases of rodent ulcer 2.1% are reported to have had some other form of cancer before, after, or concurrently with the rodent ulcer. Moreover, multiple rodent ulcers were quite common, over 8% of the patients having more than one (Report of Radium Commission, No. 5883, 1938). At the Middlesex Hospital, where careful note has been kept on this point, 32 out of 671 cases of rodent ulcer, or 4.8%, have had cancer elsewhere, excluding epithelioma of the skin.

It is well known that radiation will cure a large proportion of cases of skin cancer. In some respects this knowledge may be regarded as unfortunate, for many cases are sent direct to the radiotherapist and no other form of treatment is seriously considered. Just as in cancer in other situations, however, a case of cancer of the skin requires to be the subject of joint consideration by surgeon and radiologist. Surgical excision is still the treatment of choice in the case of a small primary lesion when removal can be secured without disfigurement or mutilation. It must also be remembered in this connexion that while recurrences of rodent ulcer are always resistant to radium treatment they are more so after radiotherapy than after excision. Surgery should also be resorted to if the response to radiation is disappointing, and often if the disease has already produced a large defect, for then the surgeon should have the opportunity to remove the growth and plan his line of repair before the healing powers of the tissues have been damaged by radiation. In each case careful consideration should be given as to which treatment will be most successful and least exacting. All circumstances should be taken into account—age and general condition of the patient, as well as the local anatomical problem.

The treatment of *naevo-carcinoma* has been disappointing to surgeon and radiotherapist alike. The extreme malignancy of naevo-carcinomata when they occur on skin or mucous membrane is well recognized. For this reason prophylactic operation by wide excision is indicated when a mole is so situated as to be liable to irritation by pressure or friction. Contrary to general belief many of these tumours are radiosensitive, and it is advisable to try the effect of radiation in all cases. Surgical removal still offers the best chance, however, and successful results have been obtained by removing the whole of the lymphatic drainage area at the time of removal of the primary growth.

The Lip

In cancer of the lip a five-year freedom rate of nearly 65% of all cases can be obtained by radiation and of nearly 90% in Stage I cases. This is as good as or better than surgery, and healing is often obtained without loss of substance. The prognosis depends on the size of the lesion, its site, duration, and whether any glands are involved. In the case of a large, deep, infiltrating epithelioma of the lip, when a considerable defect is inevitable, early surgical excision with plastic repair should be seriously considered. Surgical excision should also be employed when it is clear that a case is not responding to radiation treatment. Neck dissection is required for the lymphatic areas, but only if glands are palpable, for it has been found at the Christie Hospital that in 80% of gland-free cases in which the primary lesion can be made to heal no glandular involvement has occurred. (Christie Hospital and Holt Radium Institute—Five-year Statistical Report, 1939.)

Mouth and Throat

Discussion of cancer of the mouth and throat awakens affectionate memories of Wilfred Trotter and will always evoke a tribute of admiration for his work. If another lateral transthyroid pharyngotomy were never performed we should still owe an immense debt to Trotter, not only for the lessons he taught in operative technique but also for his contributions to what Clifford Allbutt called "the pathology of the living."

Trotter's attitude towards the question of surgical or radiation treatment for cancer of the mouth and throat is expressed in the following statement which he made a few months before his death: "It is a harmful misconception that radiotherapy has already wholly superseded primary radical excision of the disease. That it will ultimately do so we all hope, that it has already done so in large part we all know; but this aspiration and this knowledge leave untouched the fact that, at the present time, there are many cases, easily recognized by the experienced, in which primary operative excision offers by far the most substantial hope of cure." (Unpublished discussion at the Conference of the British Empire Cancer Campaign, 1939.)

Oral Cavity

In the oral cavity radiation has in fact largely superseded radical excision in the treatment of the primary lesion. In recent years at the Middlesex Hospital over 60% of these cases have received radiation treatment only.

In cancer of the cheek, the palate, the floor of the mouth, and the fauces the results of radiotherapy justify the drift from surgery. They are as good as those

obtained by excision and are often secured without mutilation or disfigurement.

In this region as well as in the larynx and pharynx and posterior third of the tongue, we must await the outcome of the radium beam therapy research which has been fostered by our College. The results so far are very encouraging, and in some cases remarkable, but they have still to stand the test of time.

The Tongue

In cancer of the tongue there are fairly comparable figures to help us statistically to assess the value of surgery and radiation treatment. The name of Whitehead of Manchester (not Liverpool as stated in the standard work on *Diseases of the Tongue*) naturally comes to mind in the history of surgical treatment in England, and Sir Henry Butlin, one-time President of our College, set a standard of success which it is often stated has never since been reached by surgery. It has also been stated that it is unsurpassed by radiation treatment, but, as will be seen in Table I, this is not borne out by a comparison of Butlin's results with those of the Christie Hospital.

TABLE I.—*Comparative Tables of Results from Operation and Combined Radiation and Operation for Carcinoma of the Tongue*

Evaluation of Sir Henry Butlin's operation results: Lived for from five to twenty-two years free from recurrence.

Stage	No. of Cases Treated	Net Five-year Freedom Rate
I, II, III	154	43 (27.9%)
IV	0	Inoperable

(*British Medical Journal*, 1909, **1**, 1.)

Christie Hospital and Holt Radium Institute: Cases treated in 1932 and 1933.

Stage	No. of Cases Treated	Net Five-year Freedom Rate
I	48	26 (54.1%) } =45.8% } =30.8%
II	24	7 (29.1%) }
III	58	7 (12%)
IV	21	0 Inoperable
Total	151	40 (26.4%)

(Five-year Statistical Report—Christie Hospital and Holt Radium Institute, 1939.)

The net survival rate in both tables is calculated after deducting the numbers not traced, those dying from intercurrent disease, and those in whom operation was incomplete.

Stage I = small primary growth, not more than 3 cm.—no glands.
,, II = primary spread beyond tissue of origin—still no glands.
,, III = ditto—but with glands.
,, IV = extensive advanced cases—inoperable.

Net freedom rates are not altogether satisfactory, but they are the only comparable figures in this instance. Butlin's general five-year figure, based on cases traced from five to twenty-two years, is 1.5% better than that of the Christie Hospital for all cases treated, but for the operable cases the rate at the Christie Hospital is 3% better than Butlin's, and we must remember the mutilation and disability resulting from extensive operations in this situation. The conclusion I have come to is that, with the exception of small lesions, recurrences, syphilitic tongues, cancer on leucoplakic areas, and lesions involving bone, radiation treatment of the primary tumour and operative removal of the lymphatic area, if and when the glands become palpable, is the treatment which gives the best prospect of cure.

The choice between surgical and radiation treatment in an individual case may depend on various considerations, such as the site and extent of the primary lesion, and also on the histological type of the tumour. Surgery and radiation are equally successful in small lesions, and surgery may often be indicated—for example, in small lesions of the tip and side of the tongue if the organ has not lost any mobility. We have all had experience of complete cure in such cases. I personally recall a case of hemi-glossectomy for early carcinoma of the tongue in which, in 1905, I assisted the late Sir William Thorburn. The patient lived for thirty-two years without recurrence and held many important positions requiring much public speaking.

Butlin performed a block dissection of the neck as a routine in his later cases. The general plan at the Christie Hospital and Holt Radium Institute is to treat the primary lesion by radiation and proceed to block dissection of the neck if glands are palpable. At one time a block dissection was carried out as a routine procedure, but the mortality of the operation is about 10%, and 68% of all gland-free *mouth* cases did not get any glandular involvement within five years, and *about half the gland-free tongue cases were still gland-free* at the end of five years. Cases without palpable glands are therefore watched carefully and at once submitted to operation if any glands become palpable.

(*The conclusion of the lecture will appear in next week's issue.*)

RECTAL HEXOBARBITONE SOLUBLE

A USEFUL FORM OF BASAL ANAESTHESIA

BY

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The use of hexobarbitone soluble (syn. evipan, cyclonal sodium, etc.) per rectum as a *basal* anaesthetic was first described by Gwathmey in 1936. Subsequently Hogan (1938) published a report of 200 cases of rectal hexobarbitone soluble used as a *total* anaesthetic. Apart from these instances the method does not seem to have been employed by many workers. We therefore decided to try out its application as a *basal* anaesthetic, especially in comparison with avertin, to ascertain its field of suitability in general surgery. The following technique has been evolved from experience gained in over 250 administrations in which hexobarbitone soluble was used per rectum as a basal anaesthetic.

Practical Considerations

We have three main routes at our disposal for the administration of a basal anaesthetic: the oral, the intravenous, and the rectal.

Oral.—This is the simplest method of administration, but in practice it has been found to be unreliable owing to unpredictable variations in the rate of absorption.

Intravenous.—This is the most accurate method, as the dosage can be adjusted during administration according to the patient's reactions. It suffers, however, from the fact that the administration must be carried out by the anaesthetist himself, which as a rule limits its use to the anaesthetizing room. The nervous patient thus loses one of the chief advantages of basal anaesthesia—namely, complete oblivion of his journey to the operating theatre. In addition the effect of a drug administered intravenously is more transient than when given by other routes.

Rectal.—The chief advantages of this route are (1) a fairly even rate of absorption, giving rise to a comparatively constant and prolonged level of narcosis, and (2) the ease of adminis-

tration. The method can soon be taught, and entrusted, to any intelligent nurse.

Most drugs used for rectal administration (e.g., paraldehyde, avertin) require the addition of a comparatively large volume of fluid for dilution. The injection of this large volume into the rectum may cause reflex expulsion, especially in children and nervous patients, unless the solution is run in very slowly by an experienced nurse. Even then "accidents" may occur. Ejection is more likely to happen if the patient has not had his rectum emptied by a preliminary enema, which should have been given not less than eight hours previously. Rectal hexobarbitone, on the other hand, is administered in such a small volume of solution (20 to 30 c.cm.) that its rejection is extremely uncommon: we have not yet had a single case in which this has occurred, even in young children. This is of considerable advantage in dealing with emergency operations. Another advantage is that tests for decomposition of the solution are not necessary as with avertin.

Technique and Dosage for Adults

A preliminary enema to clear the rectum is not required. The patient is weighed; if this is not possible a rough estimate is made. We have found the latter procedure to work satisfactorily in practice, as the dosage of rectal hexobarbitone recommended in adults allows quite a wide margin of error with safety (Hogan, 1938). Accuracy is not essential, since an error of 0.5 gramme either way in the total can be allowed with safety in healthy adults. The dosage varies according to whether there has been premedication with atropine only or morphine or omnopon has been given in addition:

(*a*) When atropine is the sole premedication (e.g., 1/100 grain) the patient's actual or estimated weight in pounds is multiplied by 0.02. The result gives the number of grammes of hexobarbitone soluble to be administered in warm tap-water.

(*b*) When there has been premedication with morphine and hyoscine (or atropine) or with omnopon-scopolamine (e.g., morphine 1/6 grain and hyoscine 1/150 grain one and a half hours before operation) the patient's weight in pounds is multiplied by 0.01 to 0.015 according to his type, age, and condition. The result gives the number of grammes of hexobarbitone soluble required. When morphine or omnopon has been given as premedication the basal narcosis produced is more satisfactory and is less likely to be followed by post-operative restlessness.

To prepare the solution the ampoules of hexobarbitone soluble are opened and each gramme is dissolved in roughly 10 c.cm. of warm tap-water. An hour before the operation the patient is turned on to his left side and made as comfortable as possible. A pillow behind him helps to prevent him from rolling on to his back when asleep. He is then told that a "couple of tablespoonfuls" of solution will be introduced into his "back passage," that he will have no difficulty in retaining it, and that it will soon send him to sleep. The solution is placed in a funnel, which is connected direct (as small a dead space as possible) to a suitable size of soft rubber catheter, the end of which is lubricated with vaseline. Any air is expelled by allowing the solution to fill the catheter, which is then pinched one to two inches from the end to be inserted. The catheter is gently inserted two to three inches into the rectum and the solution is allowed to run in *quickly*. A small additional amount of tap-water, say, about 10 c.cm., is run in to clear the catheter, which is removed immediately. The whole procedure takes not more than five minutes. Sleep usually comes on within twenty minutes and lasts for four to five hours. During the period of unconsciousness the patient responds to painful stimuli if the dosage has been correctly estimated. Respiration is quiet but not unduly depressed. The unconscious patient must be watched by the nursing staff and the usual attention paid to the maintenance of a clear airway. If necessary an artificial airway must be introduced. To prevent his tongue falling back it is advisable to keep the patient on his side till he arrives in the anaesthetic room. This position is also desirable after operation until the patient has recovered the control of his own airway. We have no objection to the adoption of this position after any type of operation, including abdominal operations.

Technique and Dosage for Young Children

For children of 10 months and upwards we use atropine alone or combined with a small dose of nepenthe as premedication. The nepenthe is desirable if the child is to have a local anaesthetic. The patient's weight in pounds multiplied by 0.02 gives the required dose in grammes of hexobarbitone soluble. The child must be weighed *accurately*, and the solution, in contradistinction to that in the adult technique, must be made up correctly by means of a 10-c.cm. syringe, which is connected direct to a small soft rubber catheter, no funnel being employed. The catheter is then gently inserted into the rectum for an inch or so, but the injection of the solution is not begun until the child has been soothed and his attention diverted from the procedure. The administrator may then inject the solution cautiously, being ready to stop temporarily if the child shows signs of straining. When the injection has been completed the catheter is cleared by means of a few cubic centimetres of warm tap-water. It is then clamped and left *in situ* until the child is asleep, as immediate withdrawal may cause rejection of the fluid. As in adults, the lateral position must be insisted upon until the child reaches the theatre.

Clinical Application

We have used the method outlined above on more than 250 cases, some of which have been classified as follows to show its varied uses.

Surgical Procedure	Age Limits	No. of Cases	Supplementary Anaesthesia	Comments
Vaginal repair, and colpo-perineorrhaphy	32–66	12	Open ether. N_2O & O_2. C_3H_6 & O_2	Respiratory and circulatory depression in one patient after unnecessary depth with ether
Excision of adenoma of thyroid	30–53	8	N_2O & O_2. C_3H_6 & O_2	Longer recovery period is here a disadvantage
Inguinal herniorrhaphy	1.5/12–56	33	N_2O & O_2. Open ether. Field block	
Partial gastrectomy	28–62	25	N_2O & O_2. C_3H_6 & O_2. Field block with splanchnic block	
Gastro-enterostomy	38–59	13	N_2O & O_2. C_3H_6 & O_2. Field block with splanchnic block	
Amputation of leg ..	50–67	5	C_3H_6 & O_2	All patients with gangrene: four diabetic, one traumatic
Appendicectomy ..	8–68	66	Open ether. Warmed ether. N_2O & O_2. C_3H_6 & O_2. Field block	Respiratory and circulatory depression in one patient after unnecessary depth with ether. A number of emergency cases are included here
Radical amputation of breast	38–62	9	N_2O & O_2	
Mastoidectomy ..	4–42	10	N_2O & O_2. C_3H_6 & O_2	
Change of plaster ..	10–52	26	Nil	One case became restless in theatre and required some N_2O & O_2
Toilet of burns in children	3–12	17	N_2O & O_2 required in some cases	

Advantages and Disadvantages of the Method

Advantages.—(*a*) There is usually complete amnesia of the journey to and from the theatre and for some hours afterwards, even if the patient has had a small dosage and has appeared only drowsy on arrival in the anaesthetic room. (*b*) Less inhalation anaesthetic is required. (*c*) The incidence of post-operative vomiting seems to be less than when inhalation anaesthesia is used alone. (*d*) Compared with avertin, hexobarbitone soluble is easy to prepare and administer and rejection does not occur. (*e*) The method is very suitable for combination with local infiltration and field-block anaesthesia. When injecting a local anaesthetic into a patient under this form of basal narcosis the limbs should first be strapped down, as the patient is liable to move in response to the needle prick. The fact that barbiturates in general protect the patient against toxic effects of local anaesthetics is an additional advantage when using this combination. (*f*) The above advantages, especially ease of preparation, make it suitable for Service patients under war conditions.

Disadvantages and Untoward Effects.—The only untoward effects we have observed have been as follows: (*a*) Restlessness in a few patients. This has not been severe and has been easily controlled by the attendant nurse. It rarely occurs if an opiate has been included in the premedication. (*b*) In only two cases has undue respiratory and circulatory depression been seen in patients premedicated with morphine; these were given an unnecessarily deep ether narcosis following a full dose (e.g., 0.2 gramme per pound body weight) of rectal hexobarbitone. Since we have gained more experience in dosage we have not seen this complication. The above patients responded to intravenous coramine and inflation with oxygen. (*c*) The length of the period of post-operative unconsciousness. This might be a disadvantage in certain cases, such as when fluid therapy by mouth is indicated as soon as possible after operation—e.g., partial thyroidectomy, etc.

The contraindications are those which apply to basal anaesthesia in general.

Summary

More than 250 patients undergoing various surgical procedures have been given rectal hexobarbitone as a basal anaesthetic followed by various forms of supplementary anaesthesia. Our experience suggests that the method is a satisfactory and easy way of producing basal narcosis.

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The Government's proposal to fortify white bread by the addition of vitamin B_1 and calcium to flour is an acknowledged compromise on the subject of brown *versus* white bread for public consumption, and the Food Education Society, which has done much over many years to educate the public on food values, views the proposal with misgivings. The society has therefore published a pamphlet entitled *Bread in Peace and War*, in which is collected much of the material that has appeared in scientific journals and the lay press on this subject and also in the columns of *Hansard*. The pamphlet opens with reports of four conferences on whole-wheat bread, which the society arranged, and the subsequent material, which is taken from a wide variety of sources—the columns of the *Journal*, the correspondence columns in the *Times*, the writings of Professor J. C. Drummond, Sir Robert McCarrison, and Dr. L. J. Picton, and even from a report of a conversation with an "interested party," a baker—presents a convincing case for the introduction of a wholemeal loaf and not a reinforced white one. The booklet should serve as a *vade mecum* for members of Parliament and of the medical and dental professions, for social workers and practical housewives. It can be obtained from the Food Education Society, temporary address, 27, Denning Road, N.W.3, price 2s. 6d.

THE EFFECT OF POTASSIUM SALTS ON CARDIAC IRREGULARITIES *

BY

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The use of potassium salts to check attacks of paroxysmal ventricular tachycardia and to prevent the occurrence of auricular and ventricular ectopic beats was reported by Sampson and Anderson (1930). In 5 cases out of 12 they were able to control the arrhythmia. The same workers (1932) later published their observations on 58 further cases, in 50% of which auricular or ventricular ectopic beats or tachycardia were checked for varying periods by an oral dose of a potassium salt of from 1 to 16 grammes. In several of their patients the arrhythmia could be permanently controlled by a maintenance dose of a potassium salt. Five different salts of potassium were used—the chloride, iodide, bromide, citrate, and acetate—all with apparently identical effects.

Extrasystoles after Injection of Adrenaline and of Insulin

The appearance of extrasystoles after an injection of adrenaline is a well-known phenomenon, and when it was shown that this substance causes a fall in the serum potassium level in man (Castleden, 1938; Allott and McArdle, 1938), the possible connexion between these phenomena and the work of Sampson and Anderson seemed worthy of investigation. At the same time the effect of potassium salts was tried upon patients who had spontaneous extrasystoles.

Adrenaline.—Of 18 subjects, aged from 21 to 71 years, who received an injection of 1 mg. of adrenaline hydrochloride intramuscularly 8 produced extrasystoles; but these varied in number per minute and were usually too transient to be useful for testing the effect of potassium in preventing them. In one of these subjects—who fairly regularly had 4 or 5 extrasystoles per minute, beginning at 16 and lasting till 24 minutes, after an injection of either 0.5 or 1 mg. of adrenaline hydrochloride—they were not abolished by an oral dose of 6 grammes of potassium chloride given one hour before they were due. In another, who had about 17 extrasystoles per minute, beginning at 4 and lasting until 29 minutes after receiving 1 mg. of adrenaline hydrochloride, they were reduced to 4 per minute by 6 grammes of potassium chloride orally one hour before they usually appeared.

It was considered that for the experimental production of extrasystoles adrenaline hydrochloride was too inconstant and unreliable a method for proper controls to be obtained.

Insulin.—Insulin by subcutaneous injection, sugar by mouth, or both together have been shown to cause a fall of serum potassium level (Aitken, Allott, Castleden, and Walker, 1937; Allott and McArdle, 1938; Harrop and Benedict, 1924; Kerr, 1928). It was of interest, therefore, when a female diabetic patient, aged 52, who was difficult to stabilize, was found to have attacks of extrasystoles during her periods of hypoglycaemia. When she was stabilized the following experiments were performed:

On May 25, 1938, at 11 a.m., her resting cardiac rate on auscultation was 65 per minute and perfectly regular, no extrasystoles being present. The blood sugar was 90 mg. and the serum potassium 18.2 mg. per 100 c.cm. At 11.30 a.m. she received her usual dose of 15 units of insulin, the meal due at 12 noon being omitted. At 12.25 p.m. a typical hypoglycaemic attack was beginning and there was an average of 10 extrasystoles per minute, counted over a long period. The

* This work was done at the British Postgraduate Medical School during the tenure of a Medical Research Council Fellowship.

blood sugar at this time was 70 mg. and the serum potassium 14.2 mg. per 100 c.cm. Glucose orally relieved the hypoglycaemia, but extrasystoles persisted for some time afterwards.

On May 28, at 11 a.m., the cardiac rate was 64 per minute, and regular, no extrasystoles being present. Blood examination showed a sugar content of 112 mg. and a serum potassium level of 18.4 mg. per 100 c.cm. A dose of 6 grammes of potassium chloride was given orally at 11.10 a.m. and the usual dose of insulin at 11.30 a.m., the midday meal being omitted as before. At 12.20 p.m. hypoglycaemic symptoms were present and the apical rate was 75. There were no extrasystoles. Blood sugar at this time was 66 mg. and the serum potassium 20.1 mg. per 100 c.cm. Glucose by mouth relieved the hypoglycaemia, and no extrasystoles were observed up to the end of the experiment at 2 p.m., when the blood sugar was 170 mg. and the serum potassium 23.6 mg. per 100 c.cm.

Spontaneous Extrasystoles

Case 1.—A man aged 83 was admitted in cardiac failure due to hypertensive heart disease and auricular fibrillation, with completely irregular rhythm. An electrocardiogram showed auricular fibrillation with a slow ventricular rate and many ventricular extrasystoles. A dose of 6 grammes of potassium chloride was given orally, and 32 minutes later the ventricular extrasystoles were abolished. Four hours after the administration of the potassium chloride the extrasystoles began to return.

Case 2.—A woman aged 61, admitted with hypertension and cardiac failure, was observed to have continuous pulsus

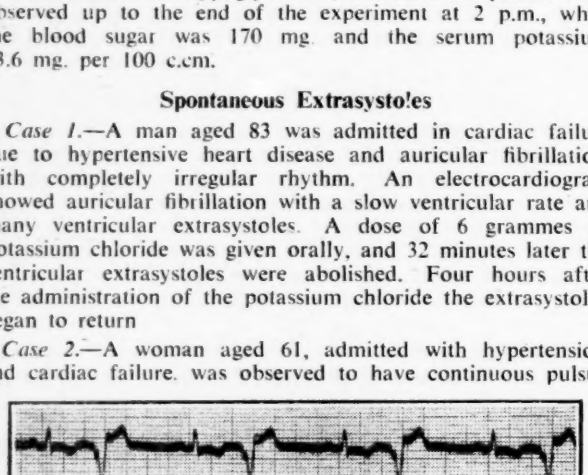

FIG. 1.—Electrocardiogram of Case 2 before administration of potassium chloride.

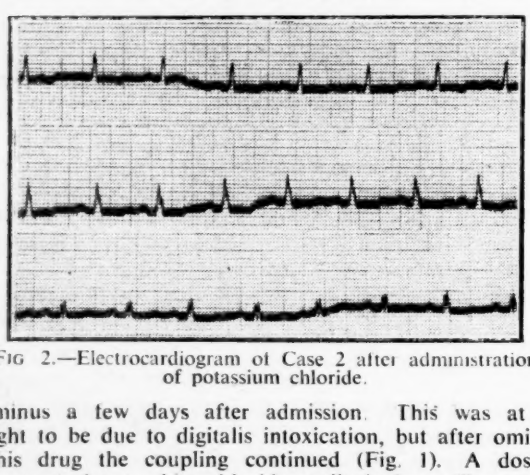

FIG. 2.—Electrocardiogram of Case 2 after administration of potassium chloride.

bigeminus a few days after admission. This was at first thought to be due to digitalis intoxication, but after omission of this drug the coupling continued (Fig. 1). A dose of 2 grammes of potassium chloride orally had no effect on this rhythm. A dose of 4 grammes reduced the number of extrasystoles from 48 to 20 per minute, and 6 grammes orally abolished them entirely for two hours (Fig. 2).

Case 3.—A woman aged 56, suffering from rheumatoid arthritis, regularly had 13 to 18 extrasystoles per minute. A dose of 3 grammes of potassium chloride orally abolished these, the effect being observable at 25 and lasting till 175 minutes after the dose. On another occasion the number of extrasystoles was 13 per minute and the serum potassium was 21.1 mg. per 100 c.cm. A dose of 4 grammes of potassium chloride orally raised the serum potassium to 28.1 mg. per 100 c.cm. in 48 minutes and abolished the extrasystoles from 18 minutes after it was taken until 2½ hours later, when there were 3 extrasystoles per minute and the serum potassium had fallen to 22 mg. per 100 c.cm.

Case 4.—A man aged 43, suffering from dyspepsia, was observed to have 10 to 12 extrasystoles per minute constantly. The serum potassium was found to be 16.5 mg. per 100 c.cm., and 6 grammes of potassium chloride was given orally. The number of extrasystoles progressively diminished until one hour after the dose none was observed. At this point the serum potassium had risen to 23 mg. per 100 c.cm. The effect of the potassium persisted for a further two hours, when extrasystoles began to make their appearance again, and the serum potassium level had fallen to 19.5 mg. per 100 c.cm. This man was then put upon a maintenance dose of 2 grammes (30 grains) of potassium chloride three times a day orally, and during the time he was taking this he had no extrasystoles.

Extrasystoles after Ephedrine

An asthmatic woman aged 29 was found to have extrasystoles on the day following a dose of 1/2 grain of ephedrine by mouth, given during the preceding night for an attack. She stated that this drug gave her palpitations, her own doctor having advised its discontinuance for this reason. A first dose of 1/2 grain by mouth was found to cause a fall of serum potassium from 17.7 mg. per 100 c.cm. before the dose to 15.8 mg. four hours after, no extrasystoles occurring during that period. A further test dose of 1 grain by mouth caused the serum potassium to fall from 18.2 mg. to 14.2 mg. per 100 c.cm in two hours. There were again no extrasystoles, but the patient complained of consciousness of the heart's action. On examination the heart was overacting; the resting rate had increased by 10 beats per minute, and the pulse pressure by 15 mm. Hg, chiefly by a fall of diastolic pressure.

One subject who refused to have samples of blood taken consented to an intramuscular injection of 1/4 grain of ephedrine, following which he had a pronounced elevation of systolic blood pressure with numerous extrasystoles for two hours. These observations make it all the more unfortunate that his serum potassium could not be estimated.

A further series of tests to determine the effect of ephedrine on the serum potassium level was therefore made. It was found that this substance, in contrast to adrenaline (Castleden, 1938), did not always produce a fall in the serum potassium level. It was also found to be more inconstant than adrenaline in the production of extrasystoles, and sometimes failed to produce the rise of blood pressure which is to some degree a constant effect of adrenaline (see accompanying table).

Discussion

Ever since the classical experiments of Ringer (1882, 1883) it has been realized that the presence of potassium

Table showing Effect of Ephedrine on the Serum Potassium Level

Experiment	Age of Subject	Resting Serum K (mg. per 100 c.cm.)	Dose of Ephedrine in grains	Serum Potassium Levels in mg. per 100 c.cm. at the Following Hours after Ephedrine								Remarks
				¼	½	¾	1	1½	2	3	4	
1	29	17.7	0.5 (O)								15.8	No E.S. No change in B.P.
2	29	18.2	1.0 (O)						14.2			No E.S. Slight rise of B.P.
3	45	20.6	0.5 (O)						18.6	20.8	20.6	No E.S. No change of B.P.
4	38	17.3	0.5 (I.M.)		20.7		17.3	19.3	18.4			No E.S. Pallor and marked rise of B.P.
5	36	16.5	0.5 (I.M.)	17.6	17.1	17.6	20.3					No E.S. No change of B.P.

O=Oral I.M.=Intramuscular E.S.=Extrasystoles.

was necessary to the proper functioning of heart muscle. Ringer showed that full relaxation of the heart muscle in diastole did not occur in the absence of potassium, that potassium increased the latent period of the response to stimuli and lengthened the refractory period, and that an excess of it caused a cessation of the heart-beat in diastole. He further showed that all these actions were the opposite of those produced by calcium, a proper balance between this element and potassium being necessary to the normal functioning of heart muscle.

Since then a great deal of experimental animal work has been done on this subject. Gross (1903) found that calcium increased the strength of cardiac contraction, lengthened systole, and decreased the sino-auricular nodal rate. Von Egmond (1913) showed that calcium increased the auriculo-ventricular conduction time and tended to produce spontaneous auricular and ventricular ectopic beats. Excess of calcium has also produced auricular and ventricular fibrillation (Rothberger and Winterberg, 1911; Hofmann, 1915).

Gross (1903) and Hofmann (1915) showed that potassium diminished the strength of cardiac contraction, shortened systole, increased the sino-auricular nodal rate, and lengthened the auriculo-ventricular conduction time in animals. Hering (1903) was able to stop paroxysmal ventricular tachycardia and ventricular fibrillation by the intravenous injection of potassium salts in the dog, and many other examples of the arrest of auricular or ventricular ectopic rhythm by this means are on record (Rothberger and Winterberg, 1911; D'Haluin, 1926; Wiggers, 1930). These workers and Norn (1929) have shown that the chloride, citrate, and acetate of potassium can be taken by man in oral doses of 1 to 15 grammes without danger, and that 10 c.cm. of a 1% solution could be given intravenously without ill effect. They have also shown that potassium salts are fairly rapidly absorbed from the alimentary canal, the maximum rise of serum potassium being observed in from three-quarters of an hour to two hours after ingestion, which agrees with our own observations (Aitken *et al.*, 1937). Potassium salts are rapidly excreted except in renal failure, which seems to be the only contraindication to their use (Smillie, 1915; Wilkins and Kramer, 1923; Rabinowitch, 1925; Cushny, 1917).

The cases recorded in this paper confirm the work of Sampson and Anderson, which seems to have attracted little attention in this country, and the work on insulin, adrenaline, and ephedrine indicates that it is possibly the fall of serum potassium which causes the well-known phenomenon of extrasystoles to appear after their therapeutic use and suggests that the oral administration of a potassium salt would sometimes eliminate this action where it occurs.

It is worthy of note that the initial level of serum potassium is not always low in patients with spontaneous extrasystoles and that the dose required to establish normal rhythm varies from patient to patient. There would seem to be four possible ways in which potassium might act in abolishing arrhythmia:

1. By the mechanism discovered by Ringer—that is, by depression of the conductivity and prolongation of the refractory period of heart muscle.

2. By replacement of the deficient potassium which has been postulated to be present in the heart muscle in some of these patients (Sampson and Anderson, 1930; Harrison, Pilcher, and Ewing, 1930).

3. By altering the hydrogen-ion concentration of the blood—an aspect of the problem which it is proposed to investigate.

4. By altering the ratio between the potassium and calcium or the potassium and sodium. This would seem to be supported by the facts that potassium chloride has been shown experimentally to produce cardiac irregularity (Wiggers, 1930; Report of Strangeway Laboratory, 1926) and that in three of Sampson and Anderson's cases a paradoxical effect was noticed after ingestion of potassium salts. In two of these there was an increase in the number of extrasystoles, and in one paroxysmal ventricular tachycardia was initiated. The oral administration of 4 grammes of potassium chloride three times a day increased the number of attacks of paroxysmal tachycardia in a patient of Dr. Paul Wood's (personal communication).

Summary and Conclusions

The administration of potassium salts caused the disappearance of extrasystoles in one case in which they were associated with insulin hypoglycaemia and in four in which they were spontaneous.

In three of these five cases the level of potassium in the serum was estimated and the disappearance of the extrasystoles was associated with a rise in potassium level.

Attempts to produce extrasystoles by the administration of ephedrine were not successful. In contrast with insulin and adrenaline, ephedrine does not produce consistently a fall in the serum potassium.

Potassium salts have been reported to produce cardiac irregularities in experimental animals and to increase the incidence of extrasystoles and paroxysmal tachycardia in some patients, so that their action in suppressing extrasystoles cannot be utilized with confidence in the treatment of patients until further work has clarified the mechanism of these effects.

My thanks are due to the Chief Medical Officer of the London County Council and to Mr. J. N. Deacon, medical superintendent of Redhill Hospital, for their consent to the publication of this paper.

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J. Mathieu (*Thèse de Paris*, 1940, No. 297), who records twenty-one cases in patients aged from 25 to 45, states that the pseudo-ulcerative form of duodenitis is assuming an increasing importance among duodenal affections. The condition is to be explained by inflammation in the ileo-caecal region, especially chronic appendicitis. Although the symptoms closely resemble those of duodenal ulcer, the correct diagnosis can be made by radiological examination. Treatment should start as soon as possible and should consist in removal of the chronically inflamed appendix and ileo-caecal adhesions. In cases where the symptoms persist, gastrectomy or duodeno-jejunostomy should be performed.

BROMIDE THERAPY AND INTOXICATION

BY

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In these days of "the war of nerves," especially in the present phase of nightly air raids, many people of "nervous" temperament suffer from an increase in their feelings of anxiety; moreover, exceptional nervous strain may produce symptoms of anxiety (such as irritability, tenseness, physical and mental restlessness, or insomnia) in individuals not constitutionally anxious. The most widely used drug in the treatment of such cases is one of the bromide salts, and there is no doubt that bromides when properly administered are extremely effective for those "nervous" cases in which anxiety in one or other of its forms is the outstanding feature, and especially so when there is reason to believe that *external* events (in contrast to intrapsychic conflicts) are causing it.

Finding the Optimum Dose

It is often not realized, however, that there are considerable variations in the dosage required to produce the greatest therapeutic effect, and that it is necessary, when once the optimum dose is discovered, to maintain it, usually for several weeks. It may be added that a gradual lowering of the dose at the end of treatment is sometimes better than a sudden cessation. Now this variability in the optimum dose depends on two factors: first, the rate of excretion of the drug; and, secondly, the personal factor whereby the optimum concentration of bromide in the blood can vary widely in different individuals. As an example of this second factor a blood bromide of 150 mg. per 100 c.cm. may be the optimum level in Patient A, while 50 mg. is best for Patient B. Moreover, Patient A might be completely unaffected if his blood bromide was kept at 50 mg., whereas Patient B if allowed to have 150 mg. per 100 c.cm. of bromide in his blood for many days might develop an acute toxic delirium. It is therefore useless, when giving bromides, to aim at reaching any definite level in the blood, and it is impossible to state what is a definite toxic threshold. On the whole, however, levels of under 100 mg. per 100 c.cm. may usually be considered safe, while in the range from 100 to 200 mg. toxic symptoms are likely to appear in certain subjects, and levels of over 200 mg. more often than not produce such symptoms. But the personal factor must never be forgotten since levels of over 350 mg. have been recorded without symptoms having been observed. In short, when considering bromides, "one man's meat is another man's poison."

The rate of excretion depends chiefly on the efficiency of the kidneys and the daily fluid and sodium chloride intake. It should be remembered that bromide acts by replacing the chlorides in the body, and the greater the consumption of salt in the diet the more rapid the excretion of bromide. Thus, if 50 grammes of bromide is given to a person who is on a low salt diet and has a small fluid intake the blood bromide at the end of twenty-four hours will be appreciably higher than when the same amount of bromide is given to someone having a greater salt–fluid intake. Patients with arteriosclerosis or cardiac or renal disease are slow excretors of bromide, and so are apt quickly to accumulate toxic concentrations of the drug, and, in general, elderly patients—with or without obvious arteriosclerosis—are liable to become intoxicated even with a low concentration.

Need for Careful Clinical Observation

The above considerations should make it clear that medication with bromides calls for careful clinical observation and control if real success is to be achieved. Doses must be large enough to be effective yet not so large as to intoxicate. It is not suggested that routine blood-bromide estimations should be made, though the test is extremely valuable in some cases—e.g., in giving guidance as to whether a swaying gait is due to an increase in hysterical symptoms or an early intoxication, and in such cases as are presently recorded. Above all, in our efforts to give bromides scientifically we must not forget that our patients are morbidly over-anxious and that they are asking for reassurance, though perhaps many of them are too anxious to ask out loud. In nine out of ten cases with prominent anxiety symptoms one or other of two recurring dreads is worrying the patient: it is either "Shall I lose my reason?" or "Shall I suddenly drop down dead?" Yet it is surprising how rarely a patient will dare to disclose either of them spontaneously. In short, the individual must be treated with psychological understanding, and when the symptoms have been clearly produced by environmental stress the advantages and disadvantages of sending the patient away for a time must be carefully considered.

When bromide treatment has been decided on, a useful initial dose is 10 grains of one or other of the salts thrice daily. On the other hand young adults showing acute symptoms of anxiety can be given double the above dose—i.e., 20 grains thrice daily. In either case the patient should be seen at the end of a week, as by that time there should already be some improvement if the dose is adequate. (Renewed psychological help will also be demanded by that time.) If there is no improvement the dose can be increased by about 50%, but not more than 90 grains daily should ever be given. On the whole those with intense symptoms need larger doses than mild cases, but the drug should always be prescribed with care for patients over 50. After two weeks mild symptoms of intoxication can begin, and should therefore be watched for. The common symptoms are complaints of tiredness, weakness, "dopeyness" or "drunkenness," inability to concentrate through mental sluggishness, failing memory, loss of appetite, and broken uneasy sleep. Some of these symptoms, of course, may have been complained of before the bromide treatment was started, but if the original symptoms of anxiety first recede and then some of the symptoms common to anxiety and intoxication develop a few weeks later, one's suspicions should be aroused.

Treatment of Bromide Intoxication

As the subject of bromide intoxication was ventilated rather freely a few years ago (Barbour, Pilkington, and Sargant, 1936), it is not proposed to dilate on the different mental and physical conditions that may be produced. It will suffice to say that the more severe intoxications are typical toxic-delirious states with confusion and visual hallucinations, while in the most severe cases coma is produced which in rare instances is fatal. It should be emphasized in passing that the presence of an acneiform skin eruption which the older textbooks used to delight in mentioning is the exception rather than the rule (Craven, 1933; Sharpe, 1934). The treatment of bromide intoxication when established or suspected is a simple procedure. The bromide is immediately stopped and large quantities of bland fluids are given. Sodium chloride is also given—30 grains four-hourly. As a precautionary measure while administering long courses of bromide the drug should be stopped for about ten days every few weeks; it is sometimes wise to give, in addition, a salt mixture during these "rest periods."

Bromide is of course one of the most widely used of all drugs, yet it is surprising how often patients with anxiety states are seen in consultation who have never had any, or at any rate not more than an odd bottle, which is practically useless. Nevertheless, in every few months of psychiatric practice a serious case of bromide intoxication crops up. The following two cases are reported, not to discourage the use of a valuable drug, but because they are of special interest. Case I was a patient practically moribund during the peak of her intoxication; it illustrates the danger to life from what is sometimes considered a harmless drug.

Case I

The patient, a woman aged 58, was first seen on December 19, 1939. Until two months previously she had always been healthy and had had no illness of any kind. She is a happily married woman, cheerful and well adjusted, and comes of a healthy family.

In October, 1939, she developed a right facial herpes zoster, the area supplied by the ophthalmic division of the fifth nerve being chiefly affected. The eruption became infected and she developed erysipelas. This quickly subsided, but she became drowsy and a diagnosis of meningitis was considered. She was then given a blood transfusion, but without noticeable improvement. For the next three weeks she became increasingly irritable, tearful, resentful, and paranoid. She then became semi-comatose and frequently screamed and moaned. When examined on December 19 in a general hospital she was extremely drowsy, but could be roused for short intervals. It was apparent that she was very confused and completely disoriented. The only constant feature of her confused state was an idea that the nurses were laughing at her. Physically her general condition was poor, and she looked very toxic and dehydrated. There was no rash. A diagnosis of a toxic-confusional state was made, and bromide intoxication was suspected because she had a tendency to herpes labialis, though her husband thought she had not been having any bromides. A sample of blood was then examined, and bromide content was found to be 300 mg. per 100 c.cm.

When next seen, on December 22, her general condition was much worse. There had been difficulty in giving her the large quantities of fluids ordered and she had consequently become even more toxic and dehydrated. Her temperature was 100° and she had a thready pulse, the rate being between 120 and 130. She was quite unconscious but very restless. She was moved to the Warwickshire and Coventry Mental Hospital the same afternoon and rectal salines were started immediately. She became so restless that repeated small injections of morphine (combined with coramine) were given during the first twenty-four hours. The main eliminative treatment was with large quantities of bland fluids, and during the three and a half days immediately following her transfer she received at least 584 oz.—an average of 167 oz. (i.e., more than 8 pints) a day. She at once began to improve, and by December 27 was conscious enough to be able to describe visual hallucinations, the occurrence of which is so common in toxic mental states. On December 29 her blood bromide was down to 250 mg., and by January 3, 1940, to 175 mg., per 100 c.cm. By the beginning of January she was able to walk a few steps unaided, and, apart from an anaesthetic right cornea and diminished appreciation to pin-pricks in the 5^1 and 5^2 areas, there were no physical signs. She was almost clear mentally and had good insight. Her blood bromide when last examined on January 23 was 125 mg. Other tests done at this time included urea clearance, which gave 70% of normal function; C.S.F. examination, which was normal in all respects (bromide 125 mg.); and the Wassermann, which was negative.

By the time she was discharged on January 31 she had completely recovered physically and mentally, and has remained well since except for occasional pain around the right eye.

Case II is of interest because it was produced accidentally by me while the patient was in hospital, in spite of precautions against intoxication having been taken; it illustrates the degree of vigilance necessary. The chief clinical interest of the case, however, was the greatly disordered carbohydrate metabolism which was temporarily produced by the toxaemia and which at first confused the diagnosis. Eric Holmes (1939) in a critical survey of the literature of abnormal carbohydrate metabolism states that it is well known that toxaemia produced by bacteria and also by substances such as chloroform and phosphorus can have drastic effects on carbohydrate metabolism, and Elkeles and Heimann (1927, 1928) found that 40 grammes of fructose given to diphtheritic patients sometimes caused hyperglycaemia and glycosuria. Such abnormality of metabolism occurring as the result of bromide toxaemia has not been previously reported so far as I know, though Dr. R. D. Lawrence informs me that he has seen almost the same with morphine poisoning.

Case II

A 64-year-old widow was admitted to hospital in April, 1939, in a depressed and agitated condition. She also expressed some depressive delusions; but there were no hallucinations, nor was there any evidence of intellectual deterioration. Physically she was in good health and there were no signs of disease. The blood pressure was within normal limits and no arteriosclerosis was found. Urine was normal and contained no sugar; the Wassermann reaction was negative and the blood count normal. Previously she had been a cheerful and capable woman and had always been healthy. She had been a hotel manageress, and when she retired in 1937 she at once regretted it. By the end of that year she had become agitated and depressed, in which state she remained without important change till her admission to hospital.

A few weeks' treatment, however, resulted in considerable improvement, and soon she started to lead an active life in hospital. Nevertheless on September 6, 1939, as she was still over-anxious, she was given a bromide mixture (ammonium bromide, 10 grains thrice daily), which was continued until October 18. A slight sedative effect was obtained, but there were no signs of intoxication. The mixture was then withheld for ten days purely as a precautionary measure, it being my practice to do this when giving bromide to elderly patients who might perhaps easily become intoxicated. The same mixture was started again on October 28, and was continued till November 24, when it was again stopped, this time for six days, as a precautionary measure. Again only a slight sedative effect had been produced. During the last week of November, however, she became agitated almost at once, so on November 30 the bromide mixture was given once more. As there was no improvement she was put to bed on December 8, and 10 grains of medinal and 5 units of insulin were ordered twice daily to produce a drowsy, restful condition. After only one dose, however, she was noticed to be perspiring freely and the nurse reported that she did not seem "very well." The case proceeded as follows:

December 9.—Slightly drowsy. Condition satisfactory. Medinal and insulin continued.

December 10.—Very drowsy, so the medinal and insulin were given once only.

December 11.—Still very drowsy, but both doses of medinal and insulin were given. Had to be helped with feeding.

December 12.—Still very drowsy. Fed by nurse. All drugs were stopped. (In addition to the medinal, insulin, and bromide she had been having thyroid for arthritis associated with obesity. She began with 1/2 grain of thyroid in September, the dose being gradually increased till in November she was having 1 grain thrice daily.)

December 13.—The patient was comatose, though her general condition was fairly good. Physical examination did not reveal any abnormal signs in the C.N.S. or other systems, but a most puzzling finding was the presence of glycosuria and a blood sugar of 230 mg. per 100 c.cm., which later in the day rose to 400 mg. The absence of acetone in the urine excluded diabetic coma. No diagnosis was made this day, though an acute cerebral condition—most probably a cerebral

haemorrhage—was considered a possibility. That the coma was due to an idiosyncrasy to barbiturates was ruled out because several months previously she had had the same doses of medinal and insulin daily for two weeks without any ill effects. Bromide intoxication was not seriously considered because of the precautions which had been taken to prevent it and because the development of coma from mere drowsiness had been more rapid than usually occurs in a bromide coma. Treatment consisted in giving plenty of glucose in orange juice and 10 oz. of rectal saline, while later in the day, when the high blood-sugar level was known, treatment with insulin and glucose was started. The blood urea was 50 mg. per 100 c.cm. Full details of urine and blood-sugar examinations, insulin dosage, etc., for December 13–16 are shown in the Table.

Table showing Details of Urine, Blood Sugar, Insulin, etc., during December 13–16, 1939

Date	Urine	Blood Sugar per 100 c.cm.	Insulin Given	Glucose Given
Dec. 13 ..	Sugar ++ (a.m.), s.g. 1022, sugar + + + (p.m.)	2.30 p.m., 230 mg. 5.30 p.m., 400 mg. 11 p.m., 340 mg.	7 p.m., 20 units During night, 80 units	Considerably more than 8 oz. of pure glucose
Dec. 14 ..	S.g. 1042, Sugar + + +, Alb. +, Acetone, nil	10 a.m., 160 mg. 4.15 p.m., 290 mg. 8 p.m., 150 mg. 10.30 p.m., 110 mg.	During day, 60 units During night, 10 units	Not noted, but not a great deal
Dec. 15 ..	Sugar, trace Alb., trace Acetone, nil	10.15 a.m., 150 mg. 5 p.m., 170 mg.	During day, 40 units During night, 20 units	No record
Dec. 16 ..	Sugar, trace Alb., trace Acetone, nil	10.30 a.m., 130 mg.	None	

December 14.—During the night of December 13 the coma deepened very much, and by the next morning she was extremely ill; the pulse ranged from 104 to 120 and the temperature averaged 100°. The blood bromide was estimated early in the morning and was found to be above 400 mg. per 100 c.cm.—an exceedingly high figure—and this knowledge made the unexpected diagnosis of bromide intoxication quite certain. Detoxication was at once started. During the day were given 2 pints of intravenous saline, 4 pints of bland fluids containing a fair amount of glucose by nasal tube, an intravenous injection of mersalyl (as no urine had been passed for nine hours), and 30 grains of sodium chloride every four hours. Three injections of nicamide were also given and 70 units of insulin in the twenty-four hours. The second intravenous saline had a dramatic effect, as there were for the first time signs of the coma lessening immediately after it had been given. This energetic treatment lowered the blood bromide to 300 mg. by 5 p.m.

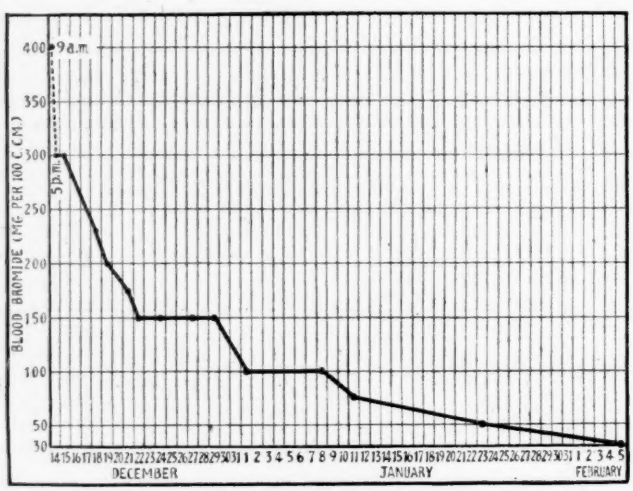

Chart showing the fall in blood-bromide levels from December 14, 1939.

December 15.—She was definitely better and the coma was lighter. The pulse was slower (average 102) and she managed to swallow some fluids unaided. Altogether 6 pints of fluids were given.

December 16.—Further improvement. Temperature normal; pulse 90. Able to swallow quite well. Conscious but confused. From this date progress was rapid, and by January 1, 1940, she was in just the same physical and mental state as before December 8. The accompanying chart shows the fall in blood-bromide levels. A blood-sugar curve and a urea-clearance test done some months later gave normal results.

Summary

The commonest indication for bromide therapy is given, and problems regarding dosage are discussed.

The importance of concurrent psychological help is stressed.

Notes on bromide intoxication and its treatment are given, and a case of almost fatal intoxication is reported.

Another case of severe intoxication is described in which hyperglycaemia and glycosuria were produced.

I wish to record my thanks to Dr. R. D. Lawrence for his helpful criticism and to Dr. D. N. Parfitt, medical superintendent of the Warwick County Mental Hospital, for permission to publish the two cases.

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A CONTRIBUTION TO THE STUDY OF HUMAN FERTILITY

BY

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Divergent opinions are expressed regarding the possible existence within the human intermenstrual cycle of a limited period of fertility. The affirmative views of Knaus and of Ogino are well known. Contrary views—for example, those of Weinstock (1934)—should also be noted. The problem is largely one of collecting reliable statistics, and it is evident that the keeping of day-to-day records by competent observers would materially clarify the position. As a contribution towards this aim I give data abstracted from complete records of sexual activity kept by two pairs of young married partners (all in the early twenties). They fulfilled the necessary experimental conditions of desiring parenthood to follow marriage after an interval of one year or, preferably, two or more years, and, furthermore, were prepared to rely upon a "safe period" procedure, in accord with the views of Knaus, as the primary means of controlling conception.

In both cases the records were kept by the husbands, who noted the date of the start of successive menstrual flows and the date and nature of all acts of intercourse. In both cases positive contraceptive measures were exclusively employed only during the six-day "fertile" period of Knaus—that is, from the tenth to the fifteenth day inclusive following the onset of the preceding menstrual flow. At other times contraceptive measures were largely or entirely dispensed with. As a result in Case A 126 totally uncontracepted acts, distributed throughout the "safe" periods of thirty-three consecutive monthly cycles, preceded the impregnating coitus, and in Case B

450 such uncontracepted acts were similarly distributed throughout sixty-one consecutive monthly cycles. In addition to these, in Case A two further uncontracepted acts just trespassed within the "fertile" period (fourteenth and fifteenth days), and in Case B there was one such further act (fifteenth day). In both cases, when the positive contraceptive measures previously employed during the "fertile" periods were discontinued the desired pregnancies were achieved and followed immediately upon the first uncontracepted acts occurring within the tenth to thirteenth day of the intermenstrual cycles. The figures for uncontracepted acts are alone relevant for our consideration, and Table I records the day-to-day distribution of such acts throughout the thirty-four monthly cycles of Case A and the sixty-two cycles of Case B, the last cycle preceding the establishment of pregnancy being recorded separately from the totals of the preceding non-fertile cycles.

TABLE I.—*Distribution of Acts of Uncontracepted Intercourse*

Days of Cycle	Case A		Case B	
	Non-fertile Cycles 1–33	Fertile Cycle 34	Non-fertile Cycles 1–61	Fertile * Cycle 62
1	0	0	0	0
2	1	0	0	0
3	0	0	0	0
4	2	0	1	0
5	3	0	2	0
6	6	0	2	0
7	3	0	2	0
8	2	0	0	0
9	1	0	1	1
Fertile period :				
10	0	0	0	1
11	0	2	0	1
12	0	3	0	1
13	0	2	0	0
14	1	2	0	0
15	1	2	1	1
16	5	0	3	0
17	3	0	5	1
18	3	0	7	0
19	5	0	20	2
20	4	0	26	0
21	4	0	30	1
22	10	0	36	0
23	9	0	47	1
24	8	0	41	1
25	9	0	42	0
26	11	0	42	2
27	6	0	37	0
28	7	0	34	0
29	9	0	27	1
30	10	0	16	0
31	2	0	7	1
32	1	0	7	0
33	0	0	3	1
34	0	Pregnancy	3	Pregnancy
35	0		3	
36	0		3	
37	0		2	
38	0		1	
39	1		0	
40	1		0	
Totals ..	128		451	

It should be added that both women were reasonably "regular," but there were some few occasions when menstruation was delayed. The duration of all the intermenstrual cycles over which the data extend is given in Table II.

TABLE II.—*Duration of Intermenstrual Cycles*

Duration in Days	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	Total
No. of cycles, Case A	0	0	3	7	4	5	8	2	2	0	0	1	0	0	0	0	1	33
No. of cycles, Case B	1	2	4	11	9	15	10	2	2	0	1	1	2	0	0	1	0	61

In Case A the war provided an interesting control in that when pregnancy was desired a short period of leave from service coincided with five of the six "fertile" days and there was naturally considerable sexual activity during this short period. No further cohabitation took place during the remainder of this last cycle in the record. Other points of interest are these. In Case A eighteen uncontracepted acts, and in Case B eight such acts, preceded the tenth day in different cycles (and therefore preceded ovulation) yet did not produce pregnancy. In Case A single acts on the ninth, fourteenth, and fifteenth days and in Case B on the ninth and fifteenth days of different cycles did not produce pregnancy. Further data which I have accumulated lead me to support the view that the type of fertility response shown by the cases described is probably widespread. The present data are published with no controversial aim, but rather with the hope that further day-to-day notes of sexual activity be kept and put on record in cases in which circumstances approximate to those here described. It is necessary to emphasize the importance of day-to-day records. Memory seems to be more than usually fallible in this sphere of human activity.

Summary

Data are given from two cases in which the dates of menstruation and of all acts of intercourse were recorded throughout periods of two and three-quarter and five years respectively. In the former case a total of 126 and in the latter case a total of 450 uncontracepted acts were distributed throughout thirty-three and sixty-one consecutive intermenstrual cycles respectively, at such times that no one of these acts fell within the tenth to the thirteenth day of the cycles. No pregnancy resulted. On the other hand, when pregnancy was desired, it was immediately achieved in both cases following the first uncontracepted acts falling within the tenth to the thirteenth day of the thirty-fourth and sixty-second cycles respectively. These results point to the existence, in the cases described, of a limited period of fertility within the intermenstrual cycle, and afford support for the view that such behaviour may be of more general occurrence.

Finally I should like to add an expression of deep appreciation and thanks for the care and understanding which my young friends gave to the collection of the data.

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Clinical Memoranda

Transplacental Tuberculous Infection

The following case may be considered of sufficient interest to merit publication.

CASE HISTORY

A married woman, aged 26, eight months pregnant, was admitted to hospital on April 21, 1939, with a history of headache and vomiting for three days. On admission she was semiconscious and showed clinical evidence of meningitis. Four hours after admission she was delivered of a living female child 5½ lb. in weight. Lumbar puncture before delivery showed a cloudy cerebrospinal fluid under pressure. Analysis confirmed an increase in lymphocytes and polymorphs, with a decrease in the chloride to 0.62%. A few tubercle bacilli were seen. The mother died on April 24, three days after delivery, without having regained consciousness.

The child, on clinical examination apparently normal for a pregnancy of eight months' duration, gained weight steadily for three months. The feeds, which consisted of secway for the first few days, followed by Cow and Gate half-cream, were well tolerated from the start. At three months enlargement of axillary and inguinal glands was noted, the glands being firm and discrete, with no tendency to break down. The temperature was intermittent in type and the child began to lose weight rapidly. At the same time it developed a cough, but there were no definite clinical findings in the chest. Radiographic examination revealed miliary tuberculosis of

both lungs. Later the liver and spleen became moderately enlarged. The child's condition deteriorated rapidly and it died on August 13, three weeks after the onset of symptoms.

POST-MORTEM FINDINGS

There was extreme emaciation. The heart and pericardium were normal, but both lungs were studded with miliary tubercles, which had coalesced into caseous areas. Large caseating glands were present in the mediastinum. The liver and spleen showed extensive caseous areas, and the kidneys had scattered tubercles in the cortex, with one or two immediately deep to the capsule. The mesenteric glands were large and caseating, and several extensive tuberculous areas were observed in the pancreas. The peritoneum appeared to be quite free from infection.

The child had no contact with the mother after delivery, and owing to domestic circumstances remained in hospital from birth. Members of the families of both parents were interrogated, and so far as could be ascertained there had been no history of tuberculosis in the past on either side. It has since been found that the house in which the woman had been living for the last twelve months of her life had been occupied immediately before by a now known open case of pulmonary tuberculosis.

Unfortunately pathological and bacteriological examination of the placenta was not carried out. Close investigation failed to establish any definite source of infection, and it appears reasonable to suppose that in this case infection was conveyed to the foetus through the placenta.

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Acute Malignant Tertian Malaria: Treatment Aided by Reconstituted Serum

Since in several dockside hospitals in the British Isles there have recently been a number of deaths from acute malignant tertian malaria acquired abroad, it is thought that a note on the treatment of one such case might be of interest.

CASE REPORT

An Indian seaman aged 35 was brought into hospital on a stretcher at 2 p.m. on August 18 and was admitted immediately. Owing to the restriction of shipping through the Suez Canal his ship sailed from India via the Cape. She had left Calcutta two months previously, calling at Capetown, and then Freetown, where she lay at anchor for two weeks before proceeding to England. At Freetown no mosquito nets were provided, and soon after leaving the port most of the crew suffered from fever and rigors. The patient had felt strong and well before this trip. Soon after the onset of fever he received on board "some pills and a watery mixture."

On examination he looked very ill; he was rather emaciated, was drowsy, and appeared to be jaundiced. The tongue and mouth were extremely dry and he was very thirsty. The spleen and liver were palpable; the urine was dark, bile-stained, and scanty. He felt very weak and had vomited several times during the preceding few days. The temperature was 102° F., pulse 120, and respirations 28. A blood count showed: red cells, 2,750,000 per c.mm.; white cells, 6,500 per c.mm.; haemoglobin 50%. Many malignant tertian ring forms were detected in every microscopical field. Gametocytes were not seen. The red cells showed secondary anaemia changes, achromia, punctate basophilia, and anisocytosis; some revealed the so-called "brassy" staining of malignant tertian malaria. The case proceeded as follows:

August 18.—At 5 p.m. 9 grains of quinine dihydrochloride was given intramuscularly, and tab. atebrin 1 grain t.i.d., alkaline mist. plus glucose by mouth to excess. At 6 p.m. the patient had a rigor. The temperature was 104°–105°, pulse 128, and respirations 28.

August 19.—At 2.30 p.m. there was no improvement in the patient's condition. He was still very drowsy. The temperature had fallen to subnormal at 10 a.m., but was now 99°. He passed some urine, the reaction being faintly alkaline. Blood smears still showed as many malignant tertian rings as on the previous day. His general condition was causing considerable anxiety. At 2.45 p.m. 7 grains of quinine was injected intravenously, followed by 10 minims of adrenaline subcutaneously. At 3 p.m. 400 c.cm. of reconstituted serum was administered intravenously by the drip method, 40 to 60 drops per minute. The patient's condition at 5.15 p.m. was much improved; his drowsiness had almost gone, he looked quite different, and he smiled and talked intelligently. Fluids were still forced.

August 20.—His condition was very much improved. The temperature rose to 101° F. at 6 a.m., then fell to 99.4° at 10 a.m. and 99° at 2 p.m. and 6 p.m., but increased to 101° again at 10 p.m. No rigors were observed, the patient ate well, and no parasites were seen in blood smears.

August 21.—The patient was getting along nicely. Temperature and urine were normal and he was taking a normal diet. Parasites were not seen in blood smears. He now made what appeared to be an uninterrupted recovery.

COMMENTARY

Until 2.30 p.m. on August 19 the patient had been gravely ill and appeared to be sinking. At this point intravenous quinine followed by reconstituted blood serum was suggested by one of us (A. H. W.), and permission was sought from Dr. P. H. Manson-Bahr to follow this course; he immediately agreed. The improvement in the man's condition after starting this treatment was striking. It is suggested that the action of the reconstituted serum is twofold: it tends to dilute and perhaps to some degree neutralize the circulating malaria toxin, and also to minimize quinine shock, sometimes sustained by toxically debilitated patients of this type.

Our thanks are due to Dr. P. H. Manson-Bahr for permission to try out this treatment and to publish this note.

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Pentothal Sodium in Tetanus

Pentothal sodium is of little value in the routine treatment of tetanus owing to its transient effect. In a severe case the actual administration would be difficult, and there may be a considerable local reaction if the drug is accidentally injected outside the vein; while marked trismus might lead to difficulty in maintaining a free airway if the dose given were insufficient to relax the jaw. The drug does, however, seem to have a certain use in such a situation as that here described.

CASE REPORT

A man aged 26 was found to have well-marked tetanic paroxysms eight days after the amputation of two fingers of the right hand which had been crushed by an overturning plough, although he had had 1,000 units of A.T.S. at the time of operation. There was, however, no trismus.

It was decided to give an intravenous injection of pentothal sodium to control the paroxysms during the journey to hospital by ambulance. Ten c.cm. of a 1 in 15 solution (0.66 gramme) was injected into a vein of the left forearm, well clear of the antecubital fossa. A generalized spasm was induced by the prick of the needle, but the arm was easily controlled by an assistant, and induction was otherwise smooth. An airway was inserted, and the journey of about fifteen minutes was completed without incident, the patient remaining relaxed and unconscious and breathing quietly. Shortly before arrival the airway was removed, as masseteric tone was returning and the gagging which often follows closely on this sign might have induced another paroxysm. The patient subsequently recovered from his tetanus after treatment on the usual lines.

Winchester. H. NOEL DAVIS, B.M., B.Ch.

J. Habas (*Thèse de Paris*, 1940, No. 306), who records seven cases in women aged from 23 to 51, states that lactation should not be regarded as the only cause of mastitis, though it presents the most favourable conditions for its development. Mastitis may develop in the course of certain infections such as typhoid fever, in which abscesses with a pure culture of *B. typhosus* are found, and in mumps.

Reviews

PSYCHIATRIC CLINICS

Psychiatric Clinics for Children: With Special Reference to State Programs. By Helen Leland Witmer, Ph.D. (Pp. 437. $2.50, or 14s. net.) New York: The Commonwealth Fund; London: Oxford University Press. 1940.

When after the war the social services come to be reconstructed and, it is to be hoped, extended, the "mental side of medicine" will have to be considered equally with the physical side, which has heretofore occupied such a disproportionate amount of attention. Guidance will be required for those concerned both directly as executive officers of the public health and indirectly as the intelligent lay public, whose approval is necessary, in a democratic State, to make any official enterprise a success. Dr. Witmer's book should therefore command a wide circle of readers, for in it she has lucidly surveyed thirty years of experiment in the mental field of medicine in America, where enterprise and resources have both so much exceeded our own.

The author starts with a historical survey of the influences which led to interest in the study of the psychiatry and psychology of childhood. There have been three avenues of approach. The first, the "organic" approach, is based on the theory that structural defects are to be looked upon as the main cause of mental deviation in children. Workers who deal with the subject from this angle will devote attention to the feeble-minded and those with neurological manifestations, and their chief object will be diagnosis and the proper distribution of such children in institutions or in "care," either in their own homes or in foster-homes, with little attention to treatment, since the condition cannot be cured. The second avenue of approach is based on analytic theories, the protagonists of which hoped that by early treatment an appreciable number of people would be kept out of mental hospitals and prisons. Experience has shown, however, that, even in the case of the functional psychoses and delinquency, pathogenic influences are not simple, that it is not easy to pick out those children who are certain or even likely to become psychotic or criminal, and that the attempt to do so is often attended by most unfortunate social consequences. The third means of approach is that of Adolf Meyer (rightly hailed by the author as the father of modern child guidance), whose main object is to afford treatment to those children who seem to require psychiatric help irrespective of ulterior motives for the future.

The second part of the book consists of a survey of the activities and difficulties of a large number of State-aided clinics throughout the Union. Owing to their declared objects, which often have not been fulfilled because of the varied standard of training and personal qualities of the staff, confusion and difficulties have arisen; these are reviewed.

Finally, the three objects of children's clinics as outlined above are discussed in more detail, and the conclusion is reached that the third approach is much the safest. There are undoubtedly very many children, whether supernormal, average, or subnormal in intelligence, who require psychiatric help in their adjustment to life. Such help must be given to the best of professional skill and ability; and if in the process better distribution is achieved of those who require "care," whether in or out of institutions, or if some who would otherwise have become psychotic or criminal do not do so, so much the better, but a start must not be made with claims which are based on ignorance and are therefore unlikely to be justified. In the last chapter is discussed the important subject of State-aided clinics for small and scattered communities. Altogether this is a most important and useful book.

VENEREAL DISEASES

Venereal Diseases. By E. T. Burke, D.S.O., M.B., Ch.B.Glasg. (Pp. 550; 133 illustrations and 6 colour plates. 30s. net.) London: H. K. Lewis and Co., Ltd. 1940.

There can be few venereologists who have a wider experience of the subject or who have given more time and thought to it than Colonel Burke, so that his book is sure of a wide circulation, and justly so. It can be said at the outset that as a guide to diagnosis it could hardly be bettered; the clinical pictures are well drawn and the colour plates and photographs are unsurpassed. On the other hand, some of the theories—such as the calculation of the amount of treatment for early syphilis, the therapeutics of bismuth, and the pathology of gonorrhoea—will hardly commend themselves to the average venereologist: a theory, after all, is only a theory till it has been proved, and the propounding of it does not establish it as a fact. In short, this book consists of matter of which 70% is thoroughly sound and 30% highly controversial, not to say heretical. As regards the former, in few books could a reader find so much valuable information put so clearly and succinctly: the clinical acumen of the author perhaps finds expression best in the statement (p. 102), "Over-treatment [of early syphilis] need not be harmful; under-treatment is bound to be disastrous." The latter cannot be discussed in detail within the limits of a short review. Suffice it to say that Colonel Burke has long ploughed a lone furrow in his evaluation of anti-syphilitic therapy and has not yet succeeded in converting any large body of venereologists.

The section on gonorrhoea is altogether admirable, but the reader will do well to ponder over what is said about the bacteriology of that disease and to accept with considerable reserve some of the views put forward.

This volume is well produced and is remarkably free from typographical errors. As constructive criticism it is suggested that rather more might have been said about post-arsphenamine jaundice and that some colour plates showing urethroscopic appearances in chronic urethritis would be a great help to those who have small experience in the use of the urethroscope. The book is hardly one for the unqualified student, as examiners might not approve of some of the views expressed; but there are few venereologists who will not learn something from it, and there is much in it to give them food for thought.

ATLAS OF SKIN DISEASES

An Atlas of the Commoner Skin Diseases. By Henry C. G. Semon, M.A., D.M., F.R.C.P. With 120 plates reproduced by direct colour photography from the living subject, under the direction of Arnold Moritz, B.A., M.B., B.C. Cantab. Second edition. (Pp. 272. 42s. net.) Bristol: John Wright and Sons; London: Simpkin Marshall. 1940.

This atlas, one of the best dermatological atlases yet produced, has deservedly attained a second edition. Seventeen plates, fully up to the standard set by the authors, have been added. Although primarily devoted to the commoner skin diseases—and this is what makes the book so useful—there is an interesting appendix of examples of less common diseases. As evidence of the efforts made by the authors to give the fullest help to the practitioner we may mention that no fewer than twenty-one plates are illustrations of various forms of dermatitis. Not only have new plates been added but

the text, which was always instructive and full of sound suggestions, has been revised and in a few instances corrected. As we noted on the appearance of the original work, colour photography is often a snare and a delusion, and frequently provides pictures that are less recognizable than are monochrome illustrations; but in the present case the authors have given us something that defies criticism. A striking testimony to their excellence is the fact that eight of the plates have been included in the recent new edition of the great French work *La Pratique Dermatologique*. We congratulate the authors on their second edition, but condole with them on the fact that it has had to appear under the shadow of war, which provides an atmosphere by no means conducive to the contemplation of pictorial art. Nevertheless, practitioners will find the atlas very useful and dermatologists will enjoy it.

NUTRITION

The Fundamentals of Nutrition. By Estelle E. Hawley, Ph.D., and Esther E. Maurer-Mast, M.D. Including Table of 100-Calorie Portions, by Estelle E. Hawley, Esther E. Maurer, and Herbert F. Van Epps, and Discussions on the Dietary Management in Specific Conditions. With a foreword by John R. Murlin, Ph.D., Sc.D. (Pp. 477; illustrated. $5.00 post paid, or 27s. 6d.) Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1940.

The contents of this book fall naturally into four sections. The first deals with the basic facts of the physiology of nutrition, and in the short space of fifty-six pages an excellent review of the problem is given. The second section deals with dietotherapy in disease and in special conditions such as pregnancy, growth, etc. Discussions of the dietary management in specific conditions are contributed by some twenty specialists associated with the School of Medicine and Dentistry in the University of Rochester. The general standard is high, and the modifications of the diets advised are based on sound physiological principles, the influence of faddism or fashion being noticeably absent.

The translation of these scientific principles into practical dietetics for the general practitioner and the housewife is based on a knowledge of tables of foods arranged in 100-calorie portions. These tables occupy thirty-three pages of the book. A great mass of information about the contents of every kind of food is available; this will be most valuable to the professional dietitian. For the general practitioner, however, diet sheets with daily menus and adequate food exchanges appear to the reviewer to be a simpler method of translating scientific principles into practice. Much useful information will also be found in regard to such problems as the planning of diets, the evaluation of nutritional states, the cost, potency, and dosage of commercial vitamin products, the preparation of food for allergic patients, etc.

The book can be recommended with confidence to those who already have some knowledge of the physiology of nutrition and to beginners who wish to make a serious study of the subject.

LAW FOR NURSES

Law for Nurses and Nurse Administrators. By S. R. Speller, LL.B., Barrister-at-Law. (Pp. 206. 10s. 6d.) London: H. K. Lewis. 1940.

The nurse, especially when she becomes senior in her profession, needs to know a surprisingly large amount of law. A matron must have at least a working knowledge of the law of master and servant, sale of goods, defamation, the liability of a hospital for its staff, the law relating to poisonous and dangerous drugs, and a dozen other subjects. The profession badly needed a book on law, and no better author could have appeared than Mr. S. R. Speller. In addition to his legal qualifications he is in close touch with the practical problems of nurses and hospital managers as secretary of the Incorporated Association of Hospital Officers and editor of *The Hospital*. He explains in his preface that his chief difficulty was to know where to set bounds to the work. Certainly within a moderate compass he has covered a very wide range. He gives an outline of English law—always a useful beginning to a book on law for lay persons—and he then sets out the legal basis of the status of a registered nurse and a certified midwife. Other chapters deal with the various contractual relations of a nurse and the difficulties of the master and servant relationship between a nurse and a hospital committee. Termination of service, dismissal without notice, testimonials, and references are discussed in this section. Other practical problems arising out of the loss of a patient's property, the detention of a patient against his will, breach of confidence, mental defectives, insurance, evidence, cheques, wills, and many other legal incidents are concisely treated. It is refreshing to see the very detailed table of contents, which makes any required part of the book easy to find; also the precise documentation of every controversial proposition and the complete references to tables of cases and statutes. Perhaps the author has devoted too much space to setting out the general law. For instance, it is a little difficult to see quite why a nurse—unless she has to answer questions in an examination—needs a list of the contracts which are only valid if set out in a deed, or of those which must be in writing. It might have been better also to confine discussion of the law of sale of goods to the immediate requirements of nurse administrators. Similarly, much of the Public Health Act and Factories Act seems a little outside the ordinary experience of nurses. These, however, are minor details, and the book should be invaluable not only to the nursing profession but also to hospital managers, owners of nursing homes, and persons whose business takes them into contact with nursing. A useful feature is the classified bibliography at the end.

Notes on Books

Dr. R. W. LAWRENCE'S well-known and useful book *The Diabetic Life* (J. and A. Churchill, 9s. 6d.) has now reached a twelfth edition, to which has been added a loose page on "Wartime Precautions for Diabetics." In his preface the author refers to inquiries he has received about food in wartime, and points out that butter and vitaminized margarine are of equal value in the treatment of diabetes. Fresh cream will be missed by many diabetics, but a satisfactory substitute can be made from milk and butter or margarine emulsified in one of the cheap apparatuses now on the market. It is also pointed out that by giving up the sugar ration diabetics receive one extra meat ration and two extra fat rations a week, for which a doctor's certificate is required by the Food Office. Dr. Lawrence well fulfils the object he set himself in the first edition of his book—namely, "to bring the modern treatment of diabetes by diet and insulin within the scope of the general practitioner and the understanding of the patient, whose intelligent co-operation is necessary for the best results."

A fourth edition of *Psychology and Psychotherapy* reminds us again of Dr. WILLIAM BROWN'S extensive culture and wide erudition, but there is still the old complaint of a lack of that cohesion in his system of psychology which we should like to see. He has added chapters on the psychology of later life and on sublimation, both of which are essays only indirectly connected with the rest of the book. Those who read this book for the first time will find much to stimulate thought, and those who already know the author's work will have

pleasure in reminding themselves of the many problems which he has opened up, even though he may not have solved them satisfactorily. The publishers are Edward Arnold and Co., and the price is 12s. 6d. net.

The appearance of a fifth edition of Conybeare's *Textbook of Medicine* (E. and S. Livingstone, 24s. net) shows that it has become firmly established in the affections of those who need a handy compendium of medical knowledge either for passing examinations or for keeping abreast of the times. In the preface the editor points out that his task has been made difficult by the dispersal of his contributors in the Services or in the Emergency Medical Service. The section on cardio-vascular diseases has been thoroughly revised by the editor in conjunction with Dr. Maurice Campbell. Dr. Maurice Mitman has co-operated with Dr. Harries in the revision of the section on infectious diseases. Fresh knowledge of the use of the sulphonamide group of drugs has been incorporated in those parts of the book which deal with the treatment of infections with micro-organisms susceptible to these compounds. Other innovations include an article on congenital cystic disease of the lung, on herniation of the nucleus pulposus, and new radiographs. Revision has in fact brought this well-known textbook up to date.

That a second edition of Mr. EUGENE WOLFF'S *Anatomy of the Eye and Orbit* (H. K. Lewis, 31s. 6d.) should be called for after seven years is evidence of the usefulness of this volume, which is wider in scope than the well-known treatise of Whitnall on the anatomy of the orbit. The book is a clear and profusely illustrated exposition of the more elementary aspects of ocular anatomy. Avoiding the minutiae of the subject, the author includes little that is controversial, though he imparts some individuality by drawing rather freely on his own material. The present edition is richer by some sixty illustrations than the previous edition, and contains a series of drawings of flat sections of the retina. The chapters on the embryology and the comparative anatomy of the eye add to the interest of the work. Much care has obviously been given to the production of this volume, but some of the references are incomplete.

Preparations and Appliances

CUT-OUTS FOR TO-AND-FRO ABSORBERS

Dr. F. BARNETT MALLINSON, honorary anaesthetist, Princess Beatrice, Royal Waterloo, and Woolwich Memorial Hospitals, anaesthetist to E.M.S., writes:

Since I described the absorber cut-out in the *Journal* for May 11, 1940 (p. 774), an improved model has been designed which, while embodying exactly the same principle as the last, has several more convenient features. A photograph of the apparatus is reproduced herewith (Fig. 1) along with diagrams depicting end and side views (Figs. 2 and 3).

The circulation of the gases is as before—passing direct from the face-piece into the canister, thence via the external pipe (P) across into the bag via a separate channel through the cut-out body, and then back again (following the same route reversed) in inspiration. A neater form of control (C) is incorporated, marked "Bag," "S/L," and "Off." The last-named is a new feature which cuts off the bag and allows the patient at the same time to breathe direct to the outside atmosphere; the purpose of this is to conserve the contents of the bag when removing the face-piece for intubation, etc. The port communicating with the air ensures that during the interval between cutting out the bag and unharnessing the face-piece the patient will still have unobstructed respiration.

As in the earlier model, the control will divert any desired proportion of the gases through the canister, but is more accurate and is easier to adjust. There is now no bayonet catch on the barrel of the control, the cut-out being a simple push-fit into the canister. A Waters canister is now generally used, and thus the owner's canister will fit without the need for a bayonet groove. The bag has been mounted in a more convenient position, and has a movable joint, thus ensuring a free and unimpeded situation for the bag, whatever the position of the cut-out or the patient.

If the patient is positioned well down the table so as to leave plenty of room on the head-piece, and his head is placed slightly to one side, it will be found that the face-piece can be applied quite comfortably, and the canister and cut-out will rest easily on the pillow with a little adjustment:

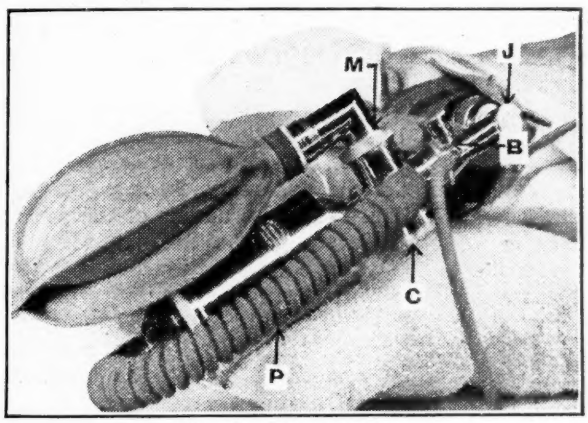

FIG. 1.—The apparatus.

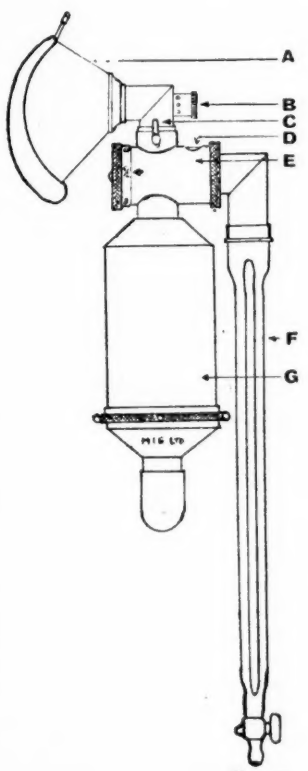

FIG. 2.

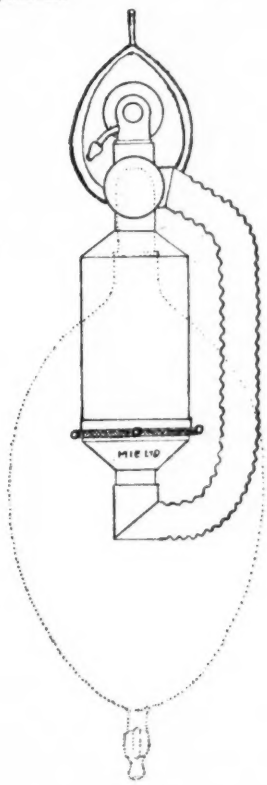

FIG. 3.

FIG. 2.—Side view. A, Face-piece. B, Expiratory valve. C, Gas inlet. D, Air inlet. E, By-pass stopcock with three positions: (1) to-and-fro breathing into bag only; (2) to-and-fro breathing through soda-lime canister and into bag; (3) canister closed both ends, bag closed and contents conserved, patient breathing air during change over. F, Bag. G, Soda-lime container.

FIG. 3.—End view.

face-piece drag does not occur, so no flexible junction is needed. Adjustment can be made: (*a*) horizontally, by rotating the angle-piece (J) in relation to the face-piece; (*b*) vertically, by varying the amount of inclination of the patient's head to the side.

Owing to the elimination of the flexible junction between the face-piece and the apparatus dead space is virtually excluded. Larger ports have reduced internal resistance to negligible proportions. The apparatus was also made for me by the Medical and Industrial Equipment, Ltd., of 12, New Cavendish Street, London, W.1.

IMMUNIZATION AGAINST INFECTION IN THE ARMY

In the recent Harben lectures Lieut.-Colonel H. J. BENSTED gave a valuable review of active immunization in the British Army.

Inoculation against Typhoid

Wright's first injection of typhoid vaccine in 1896 into two I.M.S. officers preceded much anxious work before inoculation was introduced into the Indian Army in 1906. In 1907 C. J. Martin's Committee assessed the evidence, and in 1914, when the war came, T.V., as typhoid vaccine was then called, was available for the immunization of the Expeditionary Forces. In 1915 T.A.B. was introduced. The wise author of the *Medical History of the War* safely prophesied that, as T.A.B. was superior to the vaccine used in the South African War, so would the vaccine of the future surpass the tried friend of 1914–18. From 1928 to 1932 the famous Rawlings strain of typhoid chosen by Leishman troubled the Army authorities responsible for vaccine production through its tendency to roughness in culture. In 1932 Grinnell showed that, though vaccination with certain strains protected mice against lethal doses of typhoid bacilli, the Rawlings strain then in use failed to do so. The Army group—Perry, Findlay, Bensted—and Felix supplied the key: an efficient vaccine must be derived from strains virulent to mice, giving smooth colonies and easily made suspensions and therefore containing O and Vi antigens. Our bacteriological enlightenment during this period is probably reflected in the reduction of enteric incidence in the Army in India from 4 per thousand in 1929 to 1.5 per thousand in 1936, during which time the civil incidence was raised. The Rawlings strain has been "rejuvenated," and, safely sealed on Dorsett egg medium or embedded in "lablemco agar," will continue its beneficent career. It is interesting here to recall that Greenwood and Yule were of opinion that the odds against the great reduction in enteric infections during the first world war being due to chance were 9,999 to 1.

It has been customary to give yearly to forces over-seas a reinforcing dose of T.A.B., the hypothesis being that the duration of immunity is short. Yet the laboratory staff at the Washington Army Medical School in 1939[1] found that the serum of volunteers who had been inoculated from two to ten years previously contained considerable amounts of mouse-protective antibody; after one intracutaneous dose of vaccine they showed as high titre as subjects who for the first time received the regular three doses of vaccine subcutaneously. Hahn, in the great Hanover epidemic in 1926, also found the incidence of infection among men aged 30 to 50 only half that of women of similar age, whereas between 10 and 30 the figure was the same for both sexes. Hahn attributed the escape of so many of the elder men to residual immunity from typhoid vaccination during their army days long previously.

An interesting sidelight on dosage is that in 1923 the half-starved refugees in Thrace responded to the inoculation of the T.A.B. vaccine with very severe reactions. The problem in the future is to maintain the present high immunizing potency of T.A.B. while eliminating the tendency to produce local pain and general malaise. Grasset[2] claims that the injection of efficient immunizing doses of his formolized bacillary extract causes no interruption of work among the coloured mine workers on the Rand. Should this hold good for large numbers of European children and adults the vaccine will be welcome—until in its turn it may be replaced by chemically pure antigen fractions. Colonel Bensted inclined to the view that the universal immunization of the civil population of England is unnecessary, but that since immunization during an epidemic gives virtually the same degree of protection as in non-epidemic periods inoculation may be kept in reserve for sections of the population who may be specially endangered at any time.

Cholera, Plague, Tetanus

Anti-cholera vaccination is in a different category from that with T.A.B. The long array of earnest workers since Ferran first made his injections in 1885 have not yet, in Colonel Bensted's opinion, proved the case for the value of anti-cholera inoculation; nevertheless, he believes that an immunity of short duration occurs. The Inaba and Ogawa strains used by the Army contain the all-important heat-stable O antigen.

It is not easy to assess the value of vaccination against plague, though Taylor's report indicates that the Haffkine vaccine confers a four-fold protection. Schütze's demonstration that the thermolabile envelope antigen produced during growth at 37° C. is essential for protection may result in higher efficiency in future vaccines.

For protection against tetanus in the Army we owe much to the efforts of General Marrian Perry, who in 1936 initiated work by Colonel Boyd at the Royal Army Medical College, in collaboration with the Wellcome Laboratories, to examine Ramon's findings. Toxoid recommended itself, though floccules and alum-toxoid were tried; since the replacement of Witte peptone by peptic digest in the preparation of toxoid, reports of anaphylactic reactions have become even rarer than before. The immunity of the inoculated soldier is sufficiently high to protect him against tetanus, and some 90% of our troops sent to the Continent were actively immunized, but the Army practice is to provide for the unimmunized; therefore all wounded men receive 3,000 international units of tetanus antitoxin, followed, if the patient has not been inoculated, by two weekly doses of 3,000 units. General Perry[3] reported that there have been a few cases of tetanus (actually eight) among unimmunized men, but none so far among the much greater number of immunized. Colonel Bensted called attention to the deadly danger, emphasized by Okell, Colebrook, recently Miles and his colleagues,[4] and others, of ward contamination of wounds with streptococci; he also mentioned—what probably is not so well known—that many extrafaucial infections with diphtheria in the first world war were undoubtedly due to cross-infection during war dressings. "Desert sores" were often found to be due to infection with diphtheria, and Bensted himself has recorded a persistent extrafaucial epidemic on the N.W. Frontier ended only by active immunization.

With regard to vaccination against smallpox, a large proportion of recruits have not been vaccinated in infancy and some of these suffer unusually severe reactions after vaccination. It was also clear from these lectures that the R.A.M.C. maintains a lively interest in vaccination with the stabilized attenuated strain of yellow fever virus cultivated on chick embryo at the Wellcome Bureau; in attempts to protect against influenza with a multivalent strain of influenza virus together with dog distemper virus; and in the Durand protection against typhus with centrifuged lung juice of heavily infected mice.

Colonel Bensted's lectures, though containing nothing strikingly new, constitute a timely record of the sterling work of the R.A.M.C. The British Army is one of the best protected in the world against infection.

[1] *Amer. J. Publ. Hlth.*, 1939, **29**, 95.
[2] *British Medical Journal*, 1939, **2**, 58.
[3] *British Medical Journal*, 1940, **2**, 364.
[4] Ibid., 1940, **2**, 855.

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MEDICAL PLANNING COMMISSION

As announced in this week's *Supplement*, the British Medical Association has set up a Medical Planning Commission. The matter has been under consideration for some time now in view of the changes that have taken place in the medical services since the beginning of the war. The English Royal Colleges and the Scottish Royal Corporations were invited to co-operate with the B.M.A. in this important work of reconstruction, and have agreed to do so. The Society of Medical Officers of Health, close collaborator of the Association in many matters for many years, has also promised to help. Other bodies represented are the Medical Women's Federation, the Faculty of Radiologists, and the Parliamentary Medical Committee. The Commission starts with a *tabula rasa* upon which to impress its recommendations for the future medical services of this country. It will be bound by no covenant other than its terms of reference, which are: To study wartime developments and their effects on the country's medical services, both present and future. This was amplified by the Chairman of Council at its recent meeting when he said that the time had come for the profession to give serious consideration to the problem of reconstruction and reorganization in the field of medicine in the post-war era.

The Commission has a great opportunity and an equally great responsibility—an opportunity to seize with both hands and a responsibility to call for much searching of heart and mind. It has among its numbers men of all shades of medical experience, and, incidentally, many who are well below the Psalmist's three-score years and ten. Those who are to live and to work in the future must have a prominent voice in deciding what that future shall be. But the visions of the younger men may well be framed in the experience of those whom the years have brought, not stagnation of mind, but the wisdom of maturity. The cynic will be tempted to doubt whether some seventy men, of whatever persuasion, are capable of reaching a common measure of agreement on matters of great moment. He will fear that fundamental principles will be watered down to a solution whose specific gravity will indicate the smallest possible amount of solid matter. He will forecast with glee that compromise will raise its accommodating head when a plain yea would settle a plain issue for men of sound sense. So those who doubt should hold it clearly in mind that the Commission in its full assembly is to be no more—and no less—than a forum for the discussion of the hard facts collected and classified by the committees and subcommittees formed from its number. The Commission is to be the market place in which its members, as sound Athenians, will discuss what is new and reject what is false. It will have one great advantage over the market place in that it will be presided over by a Chairman, whose qualities of tact, discrimination, and judgment will be taxed to the full.

The present war found the medical profession well prepared to play its essential part in the struggle in which the British Empire has now been engaged for some sixteen months. In October, 1937, the British Medical Association started the compilation, in its War Register, of a list of the medical men of this country in terms of their aptitude and desire for service with the Forces or on the home front. The response showed that there was no more loyal section of the population than the medical profession. But patriotism and loyalty have not stifled criticism. Rather has it been tempered in the fire of emotions from which self-interest and sectional interests have receded into the background. War has thrown up into sharp relief the deficiencies of our peacetime system of administering relief to the sick and of promoting and maintaining the health of the people. These deficiencies were, of course, plain enough to many medical men before the war, and the B.M.A. had formulated a series of constructive proposals to deal with them in its report published in 1938 on "A General Medical Service for the Nation," and in other documents. It now proposes to prepare for the return of peace so that Medicine may be ready to meet its responsibilities in a world in which many values will be changed, fresh conceptions of society will be formed, and in which new stresses and strains will appear in the moral, material, and economic fabric of the democracy we hold to be our rightful heritage.

BIOLOGY OF INFECTIOUS DISEASE

Throughout the Middle Ages, and indeed up to some seventy-five years ago when the last epidemic of cholera occurred in this country, infectious diseases were inevitably part of the experience of every citizen. Plague was endemic and at intervals epidemic in all large cities until well on into the seventeenth century; leprosy was without the walls; typhus, small-pox, and later cholera lay in wait for those—and they included the whole population—who flouted the laws of sanitary hygiene. To-day, however, in time of peace, infectious disease is only rarely of primary concern to urbanized Western man. Though he may be worried because his children have measles, annoyed that his office staff should go down with influenza, outraged on the rare occasions when he and his fellows are exposed to the risk of typhoid through contamination of the milk or water supply, he regards all these as matters for his doctor and the public health authorities. Even the doctor, in "resolving the enigma of the fever chart" for his own particular patients, has tended to forget that before all things he is a biologist, an actor in a biological drama which has for its plot the finding of a *modus vivendi* between parasites and their hosts.

When the environment is more or less stable an equilibrium is sooner or later reached, but if the environment is suddenly altered the relations between parasite and host may be violently disturbed. This explains why every major war that has ever taken place has been either accompanied or followed by epidemics of infectious disease. Totalitarian war, with its shifting of entire populations and its enforced return to a life in caves and shelters that man abandoned at the end of the Old Stone Age, gives no promise of differing from

previous conflcts in its association with crowd disease. Infection has once more become of personal interest and importance to us all. It is thus fortunate that in these critical times it is possible to refresh our knowledge of the broad biological aspects of disease by reading a book ably written by Dr. F. M. Burnet,[1] the assistant director of the Walter and Eliza Hall Institute, Melbourne. In his search for the basic facts underlying infection Dr. Burnet takes us back to the very origins of life itself. With our human egotism we are apt to think that man, with discoveries such as those of fire, of the wheel, and of how to work metals or domesticate animals, has alone been responsible for advances in the art of life. Actually the fundamental discoveries were all made by much more primitive organisms: one of these discoveries was that instead of building up the body directly from the air and from such constituents of the earth as are soluble in water it is far simpler to obtain one's food by feeding on other living organisms. To this discovery is due the development of animal life and of all forms of parasitism. Animal nutrition and parasitism are in fact identical in origin, and the work of Metchnikoff in pointing out the similarities between unicellular organisms such as the amoebae and the phagocytic cells of more complex animals is duly emphasized. Incidentally, anyone who wishes to gain some idea of what life was like in Metchnikoff's laboratory should read the entertaining biography of Dr. Etienne Burnet, the distinguished director of the Pasteur Institute of Tunis, written by his talented wife.[2]

The problem of who shall eat and who be eaten is thus a matter of aggression and defence, but whereas the methods of defence are fundamentally the same throughout the animal kingdom the aggressors vary greatly. Of the aggressive parasites, however, only protozoa, bacteria, and viruses are emphasized in Dr. F. M. Burnet's book, worms being dismissed in four lines. This omission is curious, since in tropical and subtropical countries more ill-health is caused by helminthic infections such as ankylostomiasis and bilharziasis than by any other disease, with the exception of malaria. Ankylostomiasis and bilharziasis, in fact, were mainly responsible for the increasing mummification of Egyptian civilization from the end of the Fourth Dynasty onwards. If the one aim of parasites is to obtain as much nourishment as possible at the expense of their hosts, the only real purpose in life would seem to be that of reproduction—an interesting side-light on Whitehead's dictum that the essence of life is that it exists for its own sake, as the intrinsic reaping of value. The death of its host, however, is a disaster for the parasite as much as for the host, and the most successful parasitism is that in which there is a balance between the defence mechanisms of the host and the aggressive actions of the parasite, so that neither host nor parasite is destroyed. An example of such a successful association is seen in the relation of the psittacosis virus to wild parrots, though if, as is suggested, psittacosis arose in Australia, it is difficult to conceive how this or a closely allied virus has become adapted to the fulmar petrel, *Fulmarus glacialis*, for the fulmar petrel is a North Atlantic and North Pacific species of strictly marine habit and can have had little association with the parrots of Australia.

Just as the delicate balance between host and parasite may be upset by changes in the host, so, too, variations may occur in the parasites and new diseases may arise. Apart from encephalitis lethargica, no fewer than ten new virus diseases affecting man have been described in the past twenty-five years, and of these at least nine are capable of attacking the central nervous system. Some of these infections, such as Rift Valley fever and louping-ill, are probably new only in the sense that they have been newly discovered; but with some of the others, such as St. Louis encephalitis, the evidence suggests that they really are of recent development. Although Dr. Burnet does not mention it, unequivocal evidence of a new disease arising in historical times is forthcoming in the case of myxomatosis of rabbits, which must undoubtedly have developed since the Spanish conquest of South America. If, as John Donne remarked long ago, "with new diseases on ourselves we war," it is by no means inconceivable that infectious diseases may have an important part to play in determining the shape of things to come, and a really serious world-wide epidemic would probably do more to set going a sense of genuine co-operation than anything else. Unfortunately, notwithstanding our increased knowledge of infectious diseases, the control of such a pandemic might not be easy, despite the encouraging example set by the hero of James Bridie's *Sleeping Clergyman*.

[1] *Biological Aspects of Infectious Disease*. By F. M. Burnet, M.D. Cambridge University Press. 1940. (15s. net.)
[2] *Etienne Burnet: Un Humaniste Français de son Temps*. By Lydia Burnet. Tunis: Bascone and Muscat. 1939.

TREATMENT OF TETANUS

The occurrence of three fatal cases of tetanus in children within a relatively short time led the staff of the department of paediatrics in the College of Medicine, State University of Iowa, to reconsider the treatment employed. This happened about seven years ago, and now Dr. Ralph Spaeth has recorded[1] the clinical histories of approximately the same number of patients with tetanus treated before and since 1933, when modifications were introduced. The principles of the treatment now employed include the systematic use of sedatives, intravenous injection of antitoxin, conservative surgery, and careful general management. With regard to the last, Spaeth urges the creation of special units in charge of persons drilled periodically. For the cases admitted to the University Hospital in Iowa City a printed outline of treatment has been drawn up to facilitate nursing care, especially as regards the maintenance of an adequate fluid and caloric intake and measures to prevent pneumonia. In order to secure an adequate sedative effect avertin is given per rectum with amylene hydrate. Sodium amytal has also been used alone or in conjunction with avertin, and Spaeth recommends an intramuscular injection of a 10% aqueous solution. As to antitoxic therapy, it is stressed that early and intensive treatment must be given to all patients in order to save perhaps only a limited number. In the Iowa new series (since 1933) the intravenous route has been used as the most satisfactory and the dosage has varied between 10,000 and 80,000 units as a single injection. The intrathecal route is strongly condemned. The routine now adopted is 60,000 units for patients admitted during the first five days of the disease and 40,000 units for the mildly to moderately ill patients first treated late. Spaeth sums up as follows the views on surgery of the Iowa school: "Surgical treatment of tetanus ordinarily is not an emergency procedure," and, "The principles of surgery to be followed

[1] *Amer. J. Dis. Child.*, 1940, **60**, 130.

in the treatment of tetanus are identical with those recommended in the absence of this disease." In considering the general management of the patient particular care is directed against the risks of pneumonia. When there is prolonged rigidity of the thorax inhalations of carbon dioxide (5 to 10%) in oxygen for ten minutes or so at four-hourly intervals are recommended. Change of position, tepid baths, protection from draughts, and measures to deal with secretions in the mouth or nasopharynx, even including mechanical suction, are all mentioned as important. At the same time an optimal fluid and calorie intake must be obtained, but with a minimal disturbance to the patient. Spaeth emphasizes that it is much more important to keep the patient quiet than to meet theoretical metabolic needs. In discussing the prognosis, comparison is made between the results of the older and the present programmes. Here at once comes the difficulty of the degree of severity of the cases encountered. On a classification of the disease as mild, moderate, and severe, it is found that the incidence of mild tetanus was considerably lower in the new series than in the old. Only seven out of thirty-three patients treated in the past seven years could be called "mild," as compared with seventeen out of thirty-three treated by the older methods. Nevertheless the total mortality rates showed a difference of 9% in favour of the more recently treated patients. The results among those moderate and severe cases admitted during the first four days of the disease showed that the newer methods of treatment secured thirteen recoveries and that there were nine deaths, as compared with three recoveries and ten deaths in the similar groups treated before 1933. Spaeth concludes with a strong plea for the production of active immunity among the population as a whole by the use of toxoid, as with prophylaxis against diphtheria. He also urges the more intelligent use of antitoxin. "Physicians who have encountered numerous cases of tetanus are inclined to administer antitoxin for practically all injuries, whereas those with more limited experience are prone to withhold serum in the presence of minor wounds." Spaeth sums up the indications for the use of antitetanic serum as follows: blank cartridge and powder injuries, penetrating wounds, dirty lacerations, infected burns, self-induced abortions, and injuries of any type in which contamination with soil, dust, or animal dung might have occurred. He suggests 5,000 units as a suitable prophylactic dose, although more is often employed. It should be pointed out that although the majority of the patients discussed in the review were children some adults are also included.

The most debatable item in this policy is the embargo on the intrathecal injection of antitoxin. Sherrington's classical experiments on the effect of antitoxin given by different routes point clearly to the intrathecal as the most effective, and recent observations on the same lines by W. M. Firor[2] lead to the same conclusion. Dogs were given approximately double a lethal dose of tetanus toxin intravenously, and treated with a moderate amount of antitoxin some fifty hours later, when signs of tetanus had become manifest. When this was given by the intracisternal route only three out of thirty-six died, whereas the same dose given intravenously saved only six out of twenty-five. The lumbar intrathecal route was rather less effective than the intracisternal, but still much superior to the intravenous. The treatment of animals with more advanced tetanus was naturally less successful, but even here the results favoured intrathecal administration. Clinical evidence to the same effect and on an impressive scale was put forward by B. B. Yodh[3] in this *Journal* eight years ago. This is therefore at least an open question, if indeed Spaeth's conclusion is not positively wrong.

[2] *Arch. Surg.*, 1940, **41**, 299.
[3] *British Medical Journal*, 1932, **2**, 589.

TREATMENT OF FROST-BITE

Frost-bite, owing to the conditions of trench warfare in the winter months, was a frequent cause of disability during the war of 1914–18, but it has not reached serious proportions in the rather different circumstances of the present war. In the meantime some valuable contributions have been made to the study of peripheral vascular diseases and their treatment by sympathetic denervation. Three recent papers, all of them brief because the work was carried out under conditions of military necessity, make out a good case for fuller and more carefully controlled investigation of the treatment of frost-bite of the hands and feet on the lines of surgery of the sympathetic nervous system. Soupault and Orsoni[1] record a case of bilateral frost-bite of the feet which developed some days after prolonged exposure in the wet and cold. The feet were discoloured, oedematous, cold, and painful, and it was thought that a bilateral Syme's operation would be necessary. After a series of lumbar injections of syncaine there was a marked improvement in the local signs and the subjective symptoms, and ultimately the patient lost only the tips of three toes on one side and the tip of one on the other. Five similar cases recorded by Simon and Filhoulaud,[2] none of them as severe as many seen during the last war, did not come under observation for seven to nine days after the onset of the frost-bite. Two were treated by lumbar injections of novocain and the others by femoral sympathectomy. Good circulatory responses were obtained in all, and it is claimed that necrosis was thereby limited and healing facilitated. Forster and Wiederkehr[3] report the case of a patient who developed frost-bite in one hand after motor-cycling in intense cold and came under observation eight days later. The stellar ganglion was injected by the method of Leriche and Fontaine; vasodilatation, diminution in the swelling and pain, and rapid healing followed. Under conditions of warfare frost-bite is likely to attack young men with healthy arteries—that is, excellent subjects for surgery of the sympathetic nervous system. An approach on these lines is a rational one, since the smaller arterioles are in a state of spasm. At the same time the gangrenous process is one which spreads from the surface towards the deeper tissues. The elimination of vasoconstriction may in the early stages prevent the onset of gangrene, or, when gangrene is established, may limit its spread, diminish pain, assist in the separation of dead tissue, and promote healing.

PSYCHO-ANALYSIS AND PSYCHOSES

Psychiatry, like anthropology generally, owes a great debt to Freud and some of his pupils. They have made some dry bones live, and illumined much that was mysterious. In particular, as by now every schoolboy knows, psycho-analysis has transformed our outlook, if not our treatment of what is conveniently and, *pace* some writers, even scientifically segregated as "psychoneurotic" reaction types. If some people of simple mind have sought to see behind every hysterical paralysis a fixation of the libido at the genital level, this is not the fault of the founder of psycho-analysis. But his success in describing the mental processes in a case of paranoia in "dynamic" terms—that is, as the interplay of competing "mental forces" derived from fundamental instincts and attitudes—has tempted his followers to present a "psycho-analytic psychiatry" in the sense not only of a description of psychotic phenomena but in the sense also of causal explanation. For example, Rickman some years ago tabu-

[1] *Mém. Acad. Chir.*, 1940, **66**, 358.
[2] Ibid., 359.
[3] Ibid., 367.

lated the various psychotic syndromes in terms of levels of libidinal development, especially of fixations and regressions therein, and seemed to suggest, in Birnbaum's famous term, a pathogenic as well as a pathoplastic function for these miscarriages. It is true that a schizophrenic dissolution does sometimes allow to appear in full consciousness, as if the repressive barrier had been burst, a set of feelings and ideas which form a textbook illustration of the truth of Freud's views as to the latent content of some people's minds. But is this causal or indicative of at least a constant time-sequence; or is it concomitant only? Is it the complex and the resultant conflict with reality that have disrupted the patient's mind; or has the latter only dissolved backwards along the lines of its evolution? Are we contemplating the volcanic forces behind the earthquake; or only the ruins? This is a question to which there is as yet no agreed answer; but some psycho-analysts appear to have no doubt. This attitude is less excusable when, for example, in a recent paper by Silbermann[1] the facts of observation do not present themselves in ready-made Freudian form but are reformulated by the observer in psycho-analytic language and are then said to "explain" the psychiatric process—in this particular instance a process, under the influence of shock therapy, towards recovery. Briefly, Dr. Silbermann's notion in everyday language is this. The patient receives an alarming form of treatment by which he is so frightened that he appeals to God (a father-figure), having previously neglected the existence of anyone outside himself. Now, however, he remembers to love someone other than his own image. The crucial point at which the patient undergoes the significant psychical experience of complete helplessness is considered to be the few seconds preceding the coma, which is "the deepest level of unconsciousness." But why should this be more significant than other similar kinds of experience—the stages of chloroform narcosis preceding complete unconsciousness, for example? Why, above all, if care is taken to avoid this ultimate experience, as in the method of precardiazol narcotization by N_2O or cyclopropane, or in the electrical method of evoking convulsions, does recovery still occur? This attempt to give a fundamentally psychological, and more particularly a psycho-analytic, account of what happens in shock therapy is another example of the tendency to elevate psychological description into explanation, of which the symbolic interpretation of an epileptic fit, cited in this paper by Dr. Silbermann, is a traditional and, to some minds, particularly unfortunate example, tending to bring the whole of psycho-analytic theory into discredit.

TREATMENT OF TRICHOMONIASIS IN MALES

Although *Trichomonas vaginalis* infestation in males is thought to be comparatively rare, and is certainly so when compared with the incidence of the condition in females, there is evidence that it is commoner than is generally supposed. In many cases, no doubt, the presence of the organism causes no symptoms, but routine examination of cases of chronic gleet would probably reveal trichomonads in a fair proportion. The protozoon, should it succeed in penetrating between the epithelial cells lining the urethra, may produce stricture,[2] and infection of the prostate, bladder, and kidneys may give rise to serious symptoms. Accurate diagnosis and a knowledge of the conditions which favour the growth of this protozoon are essential for successful treatment. Excellent work on this has been done by Liston,[3] who found that the organism thrives best at a *p*H of about 5.5, but cannot long survive at a *p*H of 4—that of the normal vagina—or at one of 7 to 7.5.[4] Early treatment should therefore be the aim, and an attempt should be made to render the urine neutral or slightly alkaline as quickly as possible. For this purpose the bicarbonates and citrates of potassium or sodium are most useful, and they should be persevered with because of the tendency to relapse if treatment is stopped too soon. On the other hand, it would appear, in theory at any rate, that mandelic acid therapy in the form of calcium mandelate might be successful, but it is doubtful whether it would be possible to keep the *p*H at a low enough level for a sufficient length of time to destroy all the organisms. Acriflavine, given orally in half-grain "enteric-coated" tablets, and sulphanilamide have been tried with doubtful success. Various local remedies, including devegan or stovarsol, silver picrate, and negatol, have been used successfully in cases of vaginitis. Negatol may be employed in the male as a urethral irrigation or instillation in a strength of 1% to 2%. Experience has shown that routine irrigation with the usual antiseptics, such as potassium permanganate, is not only useless but may be positively harmful, though some workers employ mercury oxycyanide. Where the infestation is only superficial maintenance of a urine *p*H of 7 to 7.5 will probably be successful, but when the submucous tissues are involved local treatment is indicated. In all cases failing to clear up with alkalis an endeavour should be made to locate lesions in the urethral canal. Infected follicles and submucous infiltrates, which if left untreated might lead to stricture formation, should be dealt with by either massage over a straight sound or the use of Kollmann's dilator. In some instances it may be necessary to employ the cautery, which should always be followed by dilatation, as strictures are more easily prevented than cured. If symptoms of prostatitis occur appropriate treatment consists in regular massage and diathermy. Cystitis has been treated successfully by daily irrigation with 1 in 1,000 nitrate of silver, and pyelitis by lavage of the pelves of the kidneys with 2% mercurochrome; in both these conditions it is worth while keeping the urine alkaline. It cannot be too strongly stressed that success in treatment depends on starting it before the organisms have got out of reach beneath the mucous membrane, and on maintaining it for some time after all symptoms have subsided. Nor should it be forgotten that in the case of a married man the wife is almost certainly infected also, and it is useless to treat the one and not the other.

[1] *Int. J. Psycho-anal.*, 1940, **21**, 179.
[2] *Surg. Gynec. Obstet.*, 1940, **71**, 369.
[3] *Brit. J. vener. Dis.*, 1940, **16**, 113.

INTRANASAL IMMUNIZATION

The Chinese for many centuries, it is said, have attempted to produce immunity against small-pox by the intranasal instillation of variolous material. That this method of immunization has a sound scientific basis has been proved by a number of observations during the past few years, while the method has been shown to be applicable to a wide variety of antigens. Attention to the possibilities of producing immunity against diphtheria by intranasal instillation was first directed by Ramon and Zoeller[5] and later by Jensen,[6] who immunized a number of children with diphtheria toxoid by this route. Fraser, Davey, and Halpern[7] in Canada have now further studied the antitoxin response in children and adults treated intranasally with concentrated and purified diphtheria toxoid, the preparations used having Lf values of 900 and 850 per c.cm. The technique consisted in soaking a small pledget of

[4] *C. r. Soc. Biol.*, Paris, 1927, **97**, 701.
[5] *Proc. roy. Soc. Med.*, 1937, **30**, 1117.
[6] *Canad. Publ. Hlth. J.*, 1940, **31**, 376.

absorbent cotton-wool in 0.5 c.cm. of toxoid and inserting it through the anterior nares till it rested between the septum and the anterior end of the inferior turbinate. The pledget remained in the nose from fifteen minutes to six hours. The antitoxin titre was tested before and after immunization, and though the individual response varied greatly, 83% of the entire group showed a good response. The Canadian workers, however, regard intranasal instillation as more suitable for reinforcing antitoxic immunity than for primary inoculation. In Japan, Kodama, Sato, and Hata[1] believe that by intranasal instillation of toxoids it is possible to bring about an effective immunity against such conditions as diphtheria, tetanus, and streptococcal and staphylococcal infections. The effects of nasal immunization are said to be more definite if, instead of saline solutions, glycerin carbolic saline solutions of the toxoids are used, as these mixtures permit much longer contact with the nasal mucosa. No undue reaction was noted in children when they were treated with a mixture of different toxoids—in fact, the effect on the production of antitoxins was more pronounced than when only a single toxoid was employed. Intranasal reimmunization invariably stimulated a rapid and high production of antitoxin. The possibility of immunizing against whooping-cough by the intranasal route has also been considered by Dow.[2] Mice, it was found, could be actively immunized intranasally with the antigens of *Haemophilus pertussis*, the results being sufficiently clear-cut to admit of a comparison of the antigenic powers of various antigenic fractions. Actually, whole vaccines of *H. pertussis* gave more effective immunization than so-called soluble antigens. After the successful immunization of mice by intranasal instillation, active immunization of human beings was attempted, the nasal mucosa being first treated by an instillation of gluco-fedrine. No unpleasant reactions were encountered, and the serum of one person so immunized was found to possess sufficient antibody to be used prophylactically with success in two children who had been exposed to infection with whooping-cough.

BAN ON HIGH-FREQUENCY APPARATUS

It is necessary to draw attention once more to the restrictions which have been placed by an Order of the Home Office on the use of high-frequency apparatus. Although the Order, which was published in full in the *Journal* of September 7 (p. 333), came into effect on September 2, many practitioners still possess high-frequency apparatus without being aware that they should have reported the fact. The Order provides that no person may have such apparatus in his possession except under permit of the Postmaster-General. The apparatus includes diathermy and electro-medical equipment using valves or spark coils. Unauthorized possession constitutes an offence under the Defence Regulations, and any possessor who has not either applied for a permit from the Engineer in Chief, Radio Branch, General Post Office, Harrogate, or reported his possession to the local police, should do so at once. At the time the Order was issued the British Medical Association sent an expert representative to discuss the matter with the authorities concerned, and it was found, and later agreed by the Physical Medicine Group Committee of the Association, that the measures taken were fully justified and "were in no way out of proportion to the exigencies of the moment." The immediate object was to reduce the number of sources of electrical disturbance and to effect some measure of centralization which would facilitate exercise of control and enforcement of precautions directed towards the abolition of interference by screening and the use of filters. This is a Home Office Order made under the Defence Regulations, and owners of apparatus to which it refers must make known that fact in their own interests and those of national security.

[1] *Kitasato Arch. exp. Med.*, 1940, **17**, 155.
[2] *Canad. publ. Hlth. J.*, 1940, **31**, 370.

THE NEW YEAR HONOURS LIST

A list of the New Year Honours conferred on members of the medical profession will be found at page 25. A baronetcy has been conferred on Mr. Hugh Lett, President of the Royal College of Surgeons. The Hon. Godfrey Martin Huggins, F.R.C.S., Prime Minister of Southern Rhodesia since 1933, receives the K.C.M.G. The K.C.I.E. has been bestowed on Major-General E. W. C. Bradfield, medical adviser to the Secretary of State for India and lately Director-General, Indian Medical Service. Dr. J. H. Hebb, Director-General of the Emergency Medical Services, Colonel C. T. Champion de Crespigny, a leading Australian physician, and Brevet Colonel Ram Nath Chopra, Professor of Pharmacology and Director of the School of Tropical Medicine, Calcutta, receive the honour of Knighthood. Dr. A. G. H. Smart, medical adviser to the Secretary of State for the Colonies, and Dr. R. T. Leiper, F.R.S., Professor of Helminthology in the University of London and Director of the Department of Parasitology at the London School of Hygiene and Tropical Medicine, both receive the C.M.G. Members of the British Medical Association will note with pleasure that Dr. R. W. Craig, Scottish Secretary, has been awarded the O.B.E., and Mr. A. T. Twelftree, Chief Clerk to the Association and to the Central Medical War Committee, the M.B.E.

"MEDICAL DIRECTORY," 1941

The ninety-seventh edition of the *Medical Directory* has been published by Messrs. J. and A. Churchill, Ltd. The typographical improvements introduced last year are repeated, and the arrangement of the *Directory* and its price (42s.) remain the same. There has been a net increase of 1,457 entries, while the number of pages of text has increased by thirty-two. The numerical summary of the medical profession shows that there are now 64,304 names, compared with 62,847 in 1940. Increases will be found in most of the sections of the *Directory*: 895 under Provinces, 75 under Abroad, 277 under Scotland, 265 under Ireland, and 96 under Wales. Two decreases are recorded: 85 under London and 66 under Services.

Dr. R. A. O'Brien, C.B.E., who joined the staff of the Wellcome Physiological Research Laboratories at Beckenham in 1910 and became director in 1914, retired at the end of 1940. Dr. J. W. Trevan, who became head of the pharmacological section in 1920, has been appointed to succeed him.

Already about 100 fully trained State-registered nurses have been allocated to various London boroughs for shelter work. More nurses, either trained or auxiliary, have been supplied locally, and the total available is now over 300. Fully trained nurses receive an inclusive salary of three guineas a week. Hours of duty are approximately ninety-six a fortnight, involving alternate nights on duty while the hours of blackout are at their longest. Four part-time shelter matrons are being appointed by the Ministry of Health to visit and supervise the nursing personnel in the shelters in consultation with the medical officers.

HEALTH IN THE SHELTERS

FURTHER RECOMMENDATIONS BY LORD HORDER'S COMMITTEE

Further proposals of Lord Horder's Committee on health in air raid shelters have been presented to Parliament by the Minister of Health and the Minister of Home Security and are now published as a White Paper.* The recommendations and the action of the Government taken thereon are printed below.

Tuberculosis

(i) That arrangements be made to hospitalize at once cases of "open" tuberculosis known to frequent shelters. If necessary, compulsory powers should be taken to effect this.

(ii) As far as possible each tuberculous family should have a family shelter and should obtain priority in the issue of an Anderson shelter or of other assisted shelter accommodation.

Local Authorities and Medical Officers of Health have been urged to see that action is taken along these lines. The necessary compulsory powers have been obtained.

Louse Infestation

(i) The Committee endorsed the action taken by the Ministry of Health for arranging (*a*) short courses of instruction at the London School of Hygiene for shelter wardens; and (*b*) the preparation and issue of a short pamphlet suitable for shelter wardens giving briefly the essential facts in the life history of the louse, the flea, and the bed-bug, and summarizing simple measures for dealing with these pests.

(ii) Selected insecticides should be made available and the methods of their application should be submitted to trial. The method or methods chosen should be set out in a leaflet for the guidance of wardens acting under medical supervision.

(iii) If compulsory powers to delouse do not at present exist they should be taken immediately.

(iv) The advisability of obtaining more accurate information in regard to the incidence of louse infestation in shelters is recognized. To this end the inquiries which have been already set on foot should be extended to other areas.

Medical officers of health are now reviewing the facilities available in their areas for cleansing. Where these are inadequate the necessary cost of making additional provision to meet the needs of persons attending public shelters will be reimbursed to the local authorities by the Ministry of Health. The Ministry is also taking steps to establish a supplementary service of mobile disinfesting units so far as supplies of necessary materials and labour permit. Quantities of the insecticides recommended have been ordered, and instructions for use, based on the results of trials, will be issued. The compulsory powers referred to have been obtained. The investigation of lice incidence will be extended as soon as methods and technique are further developed.

Bug infestation in Shelters

(i) In the construction of shelters, bunks, and other fittings, measures should, as far as possible, be taken to avoid cracks, crevices, and other harbourages for insects. To this end the Committee suggests that the practicability of treating all internal walls with impermeable paint to render them impervious to bugs should be investigated.

(ii) When a shelter is found to be infested the Committee suggests the adoption of the following method, which should result in a large measure of success, namely:

An organized system of cleaning and scrubbing and the liberal use of soap and water containing cresol. The use of a painter's blow lamp carefully applied to all cracks, etc., is an excellent simple method, which is generally applicable for small infestations.

Instructions on this matter are on the point of being issued to the authorities concerned.

Chemicals in Latrines

In view of the need for economy the Committee would point out that it is usually unnecessary to use disinfectants in latrine containers when these are being flushed or emptied frequently and regularly.

Instructions are being issued on this.

Masks

In response to a request from the Minister of Health the question of the use of masks by shelter users was submitted to an *ad hoc* Committee. Two representatives of the Medical Research Council were co-opted and have carried out helpful researches. The following tentative recommendations have been accepted by the main Committee. Meanwhile the researches referred to are being continued.

(i) The principle of the mask for reducing the risk of droplet infection is sound and should be capable of practical application.

(ii) It seems desirable to choose as a standard a type of mask that will best serve the dual purpose of reducing the spread of micro-organisms from an infected person, and, at the same time, of protecting as far as possible the uninfected person.

Bearing in mind the importance of availability of material, ease of adjustment to the face, and rapidity and thoroughness of disinfection, in addition to the main consideration of actual protection, a cellulose acetate (cellophane) screen, 5½ in. square supported by an elastic cord, is considered to be the best for standard purposes. A suitable number of such masks should be ordered so as to meet the arrival of any contingency. To obviate an unforeseen difficulty in the supply of cellophane, masks of the gauze type, consisting of at least four layers of muslin of at least forty-four threads to the inch, should also be ordered.

(iii) The yashmak type of mask, which some persons prefer to wear, and which is being commercialized, is regarded favourably by the Committee.

(iv) A memorandum for the information of medical officers of health concerning the use of masks should be issued. A leaflet should also be prepared for issue to shelter users when the necessity arises.

Orders for large numbers of the types of masks recommended in subsection (ii) above have been placed, and arrangements are being made whereby further supplies may be quickly obtained should the necessity arise. A memorandum and leaflet on the lines proposed in subsection (iv) have been prepared.

Lozenges, Gargles, and Throat Sprays

The Committee has considered the use of certain reputed prophylactic measures such as medicated lozenges, gargles, and throat sprays. From the evidence placed before it the Committee concludes that there are not sufficient grounds on which to recommend any of these methods as part of the general hygiene campaign against infection in shelters. At the same time the Committee does not wish to discourage the use of these measures by individual shelter users. It does not, however, advise that these kinds of medicaments be included in the list of drugs supplied by Government.

Smoking

(i) In the interests of public health, smoking should be prohibited in public shelters except where a separate compartment can be set aside for smokers.

(ii) This prohibition does not, of course, apply to any form of domestic shelter or domestic communal shelter.

(iii) Facilities for smoking can usually be provided in the brick surface public shelters by setting aside a compartment for the purpose.

(iv) It is suggested that, in order to avoid confusion in the public mind, the different categories of shelter should be carefully explained to the Press if, and when, this recommendation is handed to them.

* H.M. Stationery Office. Cmd. 6245. (Price 1d. net.)

The Public Shelter Rules made under Regulation 23AB of the Defence (General) Regulations, 1939, contain provisions enabling smoking to be prohibited or controlled according to circumstances.

Other Points under Consideration

The Committee is sponsoring certain controlled experiments with some of the newer forms of chemotherapeutic drugs, used as nose and throat sprays under medical supervision, and these are still in progress.

NEW YEAR HONOURS

The names of the following members of the medical profession were included in a New Year Honours List published in a Supplement to the *London Gazette* on December 31, 1940.

Baronetcy

HUGH LETT, C.B.E., M.B., Ch.B. President of the Royal College of Surgeons of England.

K.C.M.G.

The Hon. GODFREY MARTIN HUGGINS, F.R.C.S. Prime Minister of Southern Rhodesia since 1933. On the occasion of the Jubilee celebrations of the Colony.

K.C.I.E.

ERNEST WILLIAM CHARLES BRADFIELD, C.I.E., O.B.E., M.B., M.S., F.R.C.S.Ed. Major-General, Indian Medical Service. Medical Adviser to the Secretary of State for India and lately Director-General, Indian Medical Service.

Knighthood

RAM NATH CHOPRA, C.I.E., M.D. Brevet Colonel I.M.S. (ret.). Professor of Pharmacology and Director, School of Tropical Medicine, Calcutta.

CONSTANTINE TRENT CHAMPION DE CRESPIGNY, D.S.O., V.D., M.D., F.R.C.P. For public services in the Commonwealth of Australia.

JOHN HARRY HEBB, C.B., C.B.E., M.B., B.Ch. Director-General, Emergency Medical Services, Ministry of Health.

C.B. (Military)

ROBERT WALTER DICKSON LESLIE, O.B.E., L.R.C.P. & S.I. Major-General, late Royal Army Medical Corps. Honorary Physician to the King.

JOHN WALTER LENNOX SCOTT, D.S.O., M.R.C.S., L.R.C.P. Major-General, late Royal Army Medical Corps. Honorary Physician to the King.

CECIL PEMBREY GREY WAKELEY, D.Sc., F.R.C.S., F.A.C.S., F.R.A.C.S. Temporary Surgeon Rear-Admiral, Royal Navy.

C.S.I.

HUGH CLIVE BUCKLEY, M.D., F.R.C.S. Major-General, Indian Medical Service. Honorary Physician to the King. Lately Surgeon-General with the Government of Bombay.

C.M.G.

JOSEPH WELSH PARK HARKNESS, O.B.E., M.B., B.Ch., D.P.H., Colonial Medical Service. Director of Medical Services, Gold Coast.

ROBERT THOMSON LEIPER, D.Sc., M.D., F.R.S., F.R.C.P., Professor of Helminthology in the University of London and a Director of the Department of Parasitology, London School of Hygiene and Tropical Medicine.

ERIC DENHOLM PRIDIE, D.S.O., O.B.E., M.B., B.S. Director of the Sudan Medical Service.

ARCHIBALD GUELPH HOLDSWORTH SMART, M.B.E., M.D., D.P.H. Medical Adviser to the Secretary of State for the Colonies.

BERNARD TRAUGOTT ZWAR, M.D., M.S., F.R.A.C.S. President, Royal Melbourne Hospital, State of Victoria. For public services.

C.I.E.

DAVID CLYDE, M.D., D.P.H. Lieutenant-Colonel, Indian Medical Service. Civil Surgeon, Lucknow, United Provinces.

WALTER HUGH CRICHTON, M.B., Ch.B., D.P.H. Lieutenant-Colonel, Indian Medical Service. Chief Health Officer, Delhi.

HENRY HAWES ELLIOT, M.B.E., M.C., M.B., B.S., F.R.C.S. Lieutenant-Colonel, Indian Medical Service. Surgeon to His Excellency the Viceroy.

HENRY EDWARD SHORTT, M.D. Lieutenant-Colonel, Indian Medical Service. Director, King Institute, Guindy, Madras.

C.V.O.

EDMUND CLAUD MALDEN, M.B., B.Ch.

C.B.E. (Military)

ROBERT FRANCIS PRESTON CORY, M.R.C.S., L.R.C.P. Surgeon Captain, Royal Navy.

FRANCIS ROSSALL SANDFORD, M.C., M.B., B.Ch. Colonel, late Royal Army Medical Corps.

C.B.E. (Civil)

Lady RUTH BALFOUR, M.R.C.S., L.R.C.P., Chairman, Women's Voluntary Services for Civil Defence in Scotland.

THOMAS HERBERT GODDARD, M.B. For devoted services to public and philanthropic movements in the State of Tasmania.

ARTHUR HUTTON MCSHINE, O.B.E., M.D., C.M. For public services in Trinidad.

Mrs. RUTH YOUNG, M.B.E., M.B., Ch.B., Women's Medical Service. Lately Principal, Lady Hardinge Medical College, Delhi.

M.V.O. (Fourth Class)

GEORGE PROCTOR MIDDLETON, M.B., Ch.B.

O.B.E. (Military)

REGINALD ANSON MANSELL, M.B.E., M.B. Major, Royal Army Medical Corps.

ALFRED WILLIAM NORTH, L.M.S.S.A. Surgeon Commander, Royal Navy.

ARNOLD ASHWORTH POMFRET, M.B., Ch.B., D.O., D.O.M.S. Surgeon Commander, Royal Navy.

O.B.E. (Civil)

Mrs. KATIE ARDILL-BRICE, M.B., Ch.M. For philanthropic and welfare work in the State of New South Wales.

JAMES HAMILTON CAMPBELL, D.S.O., M.B., B.Ch. Colonel, Royal Army Medical Corps (retired). Air Raid Precautions Controller, Kent.

ROBERT WILLIAM CRAIG, M.D. Scottish Secretary, British Medical Association. For services in connexion with civil defence.

CLYDE CORNWALL FENTON, M.B. Flying Officer, Royal Australian Air Force. Lately Medical Officer, Northern Territory Medical Service, Commonwealth of Australia.

SYDNEY NUTTALL HAYES, F.R.C.S., F.R.C.O.G. Lieutenant-Colonel, Indian Medical Service. Professor of Midwifery, King Edward Medical College, Lahore, and Medical Superintendent, Lady Willingdon Hospital, Lahore, Punjab.

GEORGE KINNEARD, M.D. Colonial Medical Service. Senior Medical Officer, Falkland Islands.

GOPAL DAS MALHOUTRA, M.B., B.S. Lieutenant-Colonel, Indian Medical Service. Civil Surgeon, Moradabad, United Provinces.

SULTAN BAKSH MALIK, M.R.C.S., L.R.C.P. For public services in the Tanganyika Territory.

SHAMRAO RAMRAO MOOLGAVKAR, F.R.C.S. Professor of Surgery, Grant Medical College, and Honorary Surgeon, J.J. Hospital, Bombay.

ARTHUR AUBREY PALMER, M.B., C.M., F.R.C.S. For public services in the State of New South Wales.

JOSEPH FRANCIS ENGLEDUE PRIDEAUX, M.R.C.S., L.R.C.P. Director of Medical Services, Ministry of Pensions.

JOHN WIGHTMAN STIRLING, M.B., Ch.B., J.P. Principal Medical Officer, Bechuanaland Protectorate.

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FRED BARRETTO, L.M. & S., D.P.H. Assistant Director of Public Health, in charge of the Public Health Laboratory, Poona, Bombay.

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ANTONY JOHN SELVEY. Assistant Surgeon. Acting Vice-Consul and Medical Officer, British Consulate-General, Kashgar.

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D.S.C.

THOMAS BENEDICT FITZGERALD, M.B., Ch.B. Surgeon Lieutenant, Royal Naval Volunteer Reserve.

JOHN THOMAS, M.R.C.S., L.R.C.P. Surgeon Lieutenant, Royal Navy.

M.C.

KEVIN CORMACK DONOVAN, M.B., B.S. Flight Lieutenant, Royal Air Force Volunteer Reserve.

Air Force Cross

HUGH WOLFE CORNER, M.D., Ch.B., M.R.C.P. Wing Commander, Royal Air Force.

Bar to Kaisar-i-Hind Gold Medal

Mrs. OLIVE MONAHAN, M.D. Chief Medical Officer (retired), Kalyani Hospital, Madras.

Kaisar-i-Hind Gold Medal

ROBERT GREENHILL COCHRANE, M.D., M.R.C.P. Medical Superintendent, Lady Willingdon Leper Settlement, Chingleput, Madras.

Miss REBA CUTHBERT HUNSBERGER, M.D. Lady Doctor-in-Charge, Memorial Hospital for Women and Children, Sialkot City, Punjab.

WILLIAM PATRICK SMYTHE MITCHELL, M.B.E. Lieutenant, Indian Medical Department. Chief Medical Officer, Bastar State.

Mrs. DAISY ELIZABETH MUNRO, M.B.E. Lady Superintendent, Civil Hospital, Karachi, Sind.

JOSEPH LOCKHART DOWNES YULE, M.B., Ch.B. Lieutenant-Colonel, Indian Medical Service. Lately Officer Commanding, Indian Military Hospital, Delhi Cantonments.

Mentions in Dispatches

JOHN CAMPBELL HILL ALLAN, M.B., Ch.B. Acting Wing Commander, Auxiliary Air Force.

FRANK CUNNINGHAME COWTAN, M.R.C.S., L.R.C.P. Air Commodore, Royal Air Force.

FREDERICK MITCHELL DUTHIE, M.B., Ch.B. Surgeon Lieutenant-Commander, Royal Navy.

JAMES HILL, M.B., Ch.B., D.P.H. Wing Commander, Royal Air Force.

REGINALD HERBERT KNOWLES, M.D., D.P.H. Group Captain, Royal Air Force.

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Reports of Societies

HYGIENE IN AIR-RAID SHELTERS

A discussion on "Hygiene in Air-raid Shelters" was held at a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on December 20, Dr. J. ALISON GLOVER presiding.

Dr. P. G. STOCK (Ministry of Health) gave a brief history of recent events. With the onset of the air offensive there was a rush to the tubes. The herd instinct asserted itself in the desire for human companionship, which led to the desertion of the domestic for the communal shelter, with overcrowding of the latter. In many cases the people sought refuge in places which had never been approved as shelters. Until this state of affairs developed, questions relating to shelters had come under the Ministry of Home Security, and medical officers of health had not been expected to interest themselves in the matter. On September 25 the Chief Medical Officer of the Ministry of Health addressed a letter to the medical officers of the metropolitan boroughs asking them to carry out instructions regarding public air-raid shelters in their areas, but by mid-October, for one reason or another, little improvement was apparent in the sanitary conditions. Shortage of materials and labour contributed to the difficulty. Additional medical officers were detailed to visit shelters and co-operate with the public authorities. The fundamental problem was overcrowding, with its attendant evils of defective ventilation and lack of sanitation. Another serious defect in many shelters was dampness due to faulty roofing, flooding of entrances with storm water, or condensation of moisture on the walls. Apart from the deep tube stations lighting was inadequate and badly placed. In many shelters there were no means of artificial heating in cold weather. In many also there was an absence of piped water supply.

The Ministry of Health was not, as some of its ill-informed critics supposed, content to sit back with folded hands after having issued its circulars. Dr. Stock mentioned with high appreciation the personal interest of the Minister, Mr. Malcolm MacDonald. Everything possible was being done to secure the voluntary evacuation of children, of mothers with young children, and of expectant mothers. A ticket system for habitual shelterers had been introduced. A resurvey had been made to discover further shelter accommodation. At the same time it had to be admitted that such a degree of overcrowding still existed as no medical officer of health could regard with equanimity. As to ventilation, early in October a committee was appointed to consider this question, along with that of heating, and efforts were made to improve conditions by installation of fans, opening up of shafts hitherto closed, and other measures. After considerable hesitation it had been decided to put in coal-burning stoves for use in public surface shelters holding fifty persons or more in one compartment. Experiments were being made with electric heating, but the supply question rendered this impracticable in the majority of shelters.

In shelters where the night population was 500 or over the local authorities had been asked to establish medical aid posts, the cost of equipment being the responsibility of the Exchequer. He showed the meeting a plan of a post for a tube station. It consisted of two main apartments: one containing a number of bunks, a cupboard for dressings and medicines, and a dressing table; and the other an isolation space with more bunks. As a rule only cases of minor illness or accident should be retained for the night at the post, serious cases (subject to enemy activity) being removed to hospital. One disease which was considered likely to have increased incidence as a result of shelter conditions was diphtheria, and immunization free of cost was being actively encouraged. The risks of air-borne infection might be reduced by spraying the air. Following upon researches at the National Institute for Medical Research a large-scale trial of antiseptic mist had been made at the Marble Arch tube station, where the mist was introduced into the plenum ventilating system, and as many stations had not this system a further trial in which the sprays producing the mist were operated by compressed air laid in the pipe along the wall of the platform had been made at the station at Bond Street. Much of the hand-spraying at present going on probably did not create a true bactericidal mist. Perhaps the shadow of Lister would note that something like his carbolic spray was again coming into its own. The wearing of masks against droplet infection had been carefully considered, and the principle had been accepted as sound and its practical application was being worked out.

Measures against lice-borne disease were being taken, including certain instructions to shelter marshals, but there was no evidence at present of any special spread of lice in shelters. Delousing stations were being made available, medical officers of health were being asked to consider what improvised measures might be brought into use, and an investigation of a new bactericidal powder was being made. Mosquitos had proved a source of trouble in the tubes, where in the older workings there were large collections of stagnant water in which the mosquitos bred. The species was *Culex molestus*, which, although not a disease-carrier, bit humans viciously. In the tubes, where practically summer temperatures always prevailed, the mosquitos had been obtaining plentiful blood meals from the shelterers and did not go into hibernation. With regard to latrines, he mentioned the installation of hoppered cylinders, in which the pails were emptied and, after closing a valve, the contents of the cylinder were driven up a pipe which discharged into a sewer. Finally he showed a graph of the shelter population of the tubes. The highest peak—186,000—was reached in September; the numbers had now fallen to about 100,000, but the reduction was mainly in the tube stations patronized by the more prosperous part of the sheltering community.

Dr. J. ALISON GLOVER, from the chair, said that the first and hardest fight was against overcrowding, which facilitated the transmission of every infectious and contagious disease. In the broadest sense its abatement was mainly a matter of administration. Public Enemy No. 2 was damp, which was of three kinds: percolation from sides, roof, and floor; condensation; and, most important of all, the respiratory miasma which overhung all crowded assemblies. There was much, however, to be thankful for. The *Blitz* started early in September, four months before the beginning of the epidemic season, which gave time not only for material improvement in the shelters but also for acclimatization to shelter conditions by the public and the mutual exchange of nasopharyngeal organisms with, it was to be hoped, some degree of non-specific immunity in the shelter population. In the last week for which he had figures, the notifications for diphtheria and scarlet fever, though numbering more than in the corresponding week of 1939, when they were remarkably low, were still less numerous

than in 1938. Pneumonia notifications were at about the usual level. Casualties had been extraordinarily small in proportion to the weight of the air attack, and, although the work of the R.A.F. and the defence services must have the major credit, the fact that the shelters had stood up to splinters and blast much better than many anticipated must be taken into account.

The City of London

Dr. C. F. WHITE (medical officer, City of London) said that the majority of shelterers who came into the City nightly for refuge congregated in four deep tube stations. But there were a number of other shelters capable of accommodating over 500, and about one hundred in the "under 500" class. It was easy to talk about dispersal, but the difficulty of persuading people to leave an overcrowded deep tube station or tunnel for a more comfortable and airy basement had to be experienced. He had found surface shelters practically unused at night. It was a question of balancing the value of sleep and freedom from fear against the ill effects of vitiated air and risk of infection in crowded shelters. Compulsory evacuation of children was not practicable, and refusal to accept evacuation was seldom, if ever, due to the indifference of parents. At the same time, if a child's health was definitely suffering as a result of shelter life or endangered by the prevalence of epidemic disease in a shelter it should be possible to insist on evacuation or at least on transference to another shelter which, though not capable of standing up to a direct hit by a high-explosive bomb, was, perhaps for that very reason, more hygienic. If the shelter doctor could certify that the health of a child was obviously suffering, then removal might be enforced, for public sympathy would at once be on the side of the authorities. What about the disposal of cases of German measles and mumps occurring in the shelters? It was useless to suggest that these should be treated at home. If the isolation hospitals could not take them they must be kept in the medical aid posts and adjoining sick bays or transferred to shelters reserved for cases of minor illness. He was strongly in favour of the latter course.

It was difficult to believe that aerosols would be of much value for the disinfection of the air in the enormous spaces with which it was necessary to deal. The barrier method might be practicable and useful if they could concentrate in a certain part of the shelter cases liable to disseminate infection. It was useless to expect the installation everywhere of efficient mechanical ventilation; the best possible must be done by keeping open entrances and emergency exits and the use of electric fans. The heating of shelters might or might not be necessary. Deep underground shelters were usually too hot and humid. In one tunnel the temperature was never less than 70° F. at night. Smaller shelters with concrete floors and brick walls were usually too cold, yet on account of deficient ventilation heating could not be introduced. The shelterers must make adjustments by having more clothing or bedding.

The disposal of excreta was an enormous task. In the City, in the expectation that the shelterers would be mainly persons employed in offices or shops, an excellent type of chemical closet was installed in the proportion of one closet to every twenty-five persons in the day capacity. As the night capacity was from one-half to one-third of the day capacity there was an ample supply of conveniences, but he had been appalled at the way in which they had been abused by a certain section of the population. He had come to the conclusion that anything but the simplest appliance—a pail straddled by a wooden frame—was a waste of money, and in the pail he would have only a solution of some coal-tar disinfectant as a deodorant. He understood that the tube shelters were trying to work to a figure of one convenience for every seventy-five shelterers, but he doubted whether they would attain this. In the City it had been arranged to have the large public conveniences which were in close proximity to the tube stations open free all night long, but the results had been disappointing; the shelterers either would not take the trouble or were afraid to make the short journey outside. The only thing to do in the tube stations was to arrange for the closets to be kept under observation and emptied as necessary during the night. The installation of the pneumatic ejector systems would reduce the labour of the cleansing department.

There was no serious lice infestation as yet in the City, but he was afraid this might not continue to be the case. For homeless shelterers some opportunity for personal ablution must be provided, but for the washing of clothing and bedding shelterers must be referred to the districts in which their homes were situated. Bunks would have to be dealt with *in situ* by the application of liquid insecticides. In conclusion he begged critics of medical officers of health to realize the difficulty of the conditions under which they had been working.

General Discussion

Dr. S. DAVIDSON thought it a too optimistic view to expect that major epidemics would be escaped unless much more care was taken than at present. From his observation in the north-west of London brick shelters were almost unoccupied; people thought there was more protection in a deep shelter, and took the risk of contracting disease. It was also well to remember that eight or ten people in an Anderson shelter or fifty or sixty in a brick shelter were just as much overcrowded as 2,000 or 3,000 on a tube platform. The medical profession ought to concern itself with the provision of some form of bomb-proof shelter, possibly on the Haldane model (*British Medical Journal*, November 16, page 678). Dr. SINCLAIR-LOUTIT said that the fouling of lavatory accommodation was largely by young children, who found the adult-size chemical closet too big a problem. The provision of closets in the proportion of 1 in 25 if a fair proportion were small ones should make a great difference. As to the problem of the people who were ill but not in hospital, in a community of 50,000 there were roughly 1,400 cases of notifiable disease, of which only about 600 were sent to hospital. The population of the area he had in mind was now reduced to 38,000, but it still left a large number of persons with notifiable disease who had to be dealt with in their own homes or in the shelters. Among the same community there were about 350 young adults with a history of tuberculosis. Some plan ought to be found for the allocation of shelter space to these cases. Dr. UNDERWOOD (West Ham) did not believe that this policy of isolating tuberculous cases would meet with success. It would have to meet the psychological objection that people would refuse to declare themselves tuberculous by going into the special shelters. As in the City of London, so in his own borough of West Ham, there did not appear to be any evidence as yet of infestation in the shelters. Dr. A. BENJAMIN pleaded for more co-ordination between the engineering and medical departments of the local authorities. He related a case in which, in a shelter with seating accommodation for 180 people, exactly that number of bunks had been put in, resulting in overcrowding. The safe number was 132, but there was extraordinary delay in getting the surplus bunks removed. Dr. W. H. BRADLEY (Ministry of Health) described some work on the design of masks to prevent danger from droplet infection. The main difficulties in introducing light muslin masks in the shelters were the shyness of those whom it was hoped would use them, the absence of aesthetic appeal, the general indifference in the absence of any heavy infection, and the fact that the masks soon became moist and uncomfortable. It was fully realized that masks could be of great use in preventing direct projectile infection, but there were a number of practical difficulties in the way.

The Chairman of the Government Committee

LORD HORDER said that he had always regarded the shelter problem as an emergency one, rather like an acute if not fulminating disease. There would never be an ideal shelter. The problem had to be dealt with in opportunist fashion, and the difficulties removed so far as possible when they could not be got rid of entirely. From his experience of the framing of recommendations he felt strongly that these should be couched in positive, not negative, terms, also that they should be practicable, and, finally, that the psychological effect should be kept in mind. One must not be afraid of making suggestions which to the scientific ear might sound rather trivial. He thought it not incompatible for two policies to be pursued side by side; one of these was a long-term policy, in regard to which the refrain must be "Unload! Unload!" But it took a long time to "unload" these shelters, and therefore a short-term policy was also needed if the situation was

to be saved before the height of incidence of epidemic disease was upon us. He did not agree with one speaker who had suggested that doctors ought to concern themselves with the safety aspect of shelter policy—that is, safety against enemy action—but he reminded the audience that so far as fatal casualties were concerned it was a question of half-and-half anyway as between above-ground and under-ground shelters, and it was as well to bear in mind that some of the deep shelters were actually under military objectives, and for this reason the people might be safer on the surface.

There were some compensations in this "hideous emergency which has been thrust upon us." The research which had been stimulated would undoubtedly lead to valuable and permanent contributions to preventive medicine. It had also opened up a field for health education second to none in his experience. The shelterers were ready to listen to the advice given them and could be trusted to a large extent to carry out the instructions given by medical officers of health. Lord Horder added that he trembled every time he signed the final form of a recommendation, wondering what would be the reaction among his colleagues, and he was amazed at his "luck" so far in that his attention had not been drawn to any very obvious errors.

Dr. STOCK, in replying on the discussion, said that when school shelters were used as public shelters during the night very special care should be taken over the cleansing. The difficulty of cleansing bedding and clothing might be solved by mobile units. Further recommendations of the Horder Committee would be issued as a White Paper, and he thought would include advice on the wearing of masks, as to which valuable co-operation had been given by workers at the National Institute for Medical Research. One provision about bunking was that there must be at least two feet between the rows of bunks. Where, for some reason, this was impossible a partition had been devised for use between the head portions of adjacent bunks. He concluded by saying that there was one gleam of hope in the situation—namely, that the constitution of the "herd" in the public shelter might help to avert the disasters of the old epidemics. The "herd" was of much the same constitution as the ordinary population of London, but with a large number of the more susceptible members—namely, children—removed.

Correspondence

Unification of Shelter Control

SIR,—Your correspondent Dr. A. S. Jarman (December 21, p. 880) raises a point of central importance when he says that it is time we, as doctors, faced our social responsibilities. But the rest of his letter appears to be based on a misconception of the present situation. The shelter problem of London divides itself into two parts. The first part is that of providing reasonable safety from disease (as well as bombs) for that part of the population of this and other big cities who either live in or are able to reach districts where big buildings or such public works as tubes are available for use as shelters. To these, doctors and nurses have in many cases been appointed, bunks and canteen facilities provided, and to these shelters apply those improvements of which, in the B.B.C. and the Press, we have heard so much.

Quite different, however, is the problem presented by those areas of London and other cities where no such buildings exist, and where the district is composed of small dwellings, wharves, etc., incapable of providing large shelters. To talk of shelter doctors in relation to these is an absurdity, as no such shelters exist, and the fleeting moments of the visits of doctors and nurses, when they occur, can do no more than deal, and that unsatisfactorily, with pressing emergencies. In these areas the population is compelled to save itself as best it can with assistance from none but voluntary bodies, since nothing else is forthcoming. If it is argued that the central Government has delegated sufficient powers to local authorities to deal with all emergencies, the answer is that the multiplicity of these authorities, the apathy of many, and the extreme overwork of others almost wholly negate these powers. The problem is much greater than that of shelter diseases; it is that of securing the elementary necessities of living, hygiene, and sanitation, for an immense mass of our fellow citizens.

The areas and the people who inhabit them are the front line of the war, and as an army cannot act without a general and as the work of excellent relief units in the past has been ruined by an attempt to run them by committees, so the creation and organization of the measures to deal with this situation demand a directing mind with adequate resources and full authority to act. To urge arguments against this proposal because the term "dictator" has been used is to quibble about words. As I attempted to point out in a previous letter, the whole structure of local administration and the education of its officers is aimed at preventing the possibility of swift and co-ordinated action, and it is exactly that which the whole of Britain now urgently demands should happen in London. If the situation in the poorer areas of London and of the other bombed cities is to be met with energetic unified action, a single head who tackles the problem as a whole and acts directly through obstacles to the central objective is essential.

As a profession we are responsible to the people for their health. Is it not time that we roused ourselves, and as a body saw to it either that the central Government makes use of those powers we have delegated to it, or that by other and more direct means this objective is gained? We have in the British Medical Association the necessary instrument to collect information, disseminate it, and see that pressure is brought to bear on the authorities. Let us then take responsibility for our part of the war and "go to it."—I am, etc.,

London, W.1, Dec. 26. MARGARET LOWENFELD.

SIR,—Nearly every day for many years my work has taken me to the East End of London. I have therefore read with keen attention what the official representatives of the medical profession have permitted to appear about the shelter problem. It seems to me that the medical profession, whose individual devotion is unquestionable, has in one respect failed collectively to do its duty in the present crisis.

In addition to the natural obligations of community, there are other and forceful reasons why we, as a profession, should rise to this occasion, which is unique only in its urgency. The people living in industrial areas, particularly the East End of London, who always face circumstances with courage and heroism, have for the moment become an integral part of the front-line defences of this country. They are not just a group living within a national front; they are an integral part of it. It is for them that government exists. The Germans, who, since they planned it, have clearly visualized the nature of this war, know that civilian morale is a military objective. Now the medical profession who work among the poor know the appalling conditions which have always existed and which are intensified by the *Blitzkrieg*. Human beings deserving of comfort and security have as their constant lot overcrowding and anxiety. Now they live in conditions which approximate to the filth of the Middle Ages. This is particularly true of the smaller shelters which have not yet been brought under co-ordinated control. Such conditions, if perpetuated, must undermine that integration of character which we call morale.

It is therefore the natural duty of the medical profession to investigate and to make known the facts of the situation against whatever official opposition exists. I suggest that we should appoint a body whose business it is to amass information and to make it known to the general public together with its recommendations. Our position is happily still such that no Government could exist for long which ignored a report based, not on sectional and professional interests, but on the objective necessities of a social situation.

A large part of the solution of these problems depends on powers of control. In this connexion it is necessary to point out to some of your correspondents that there is a difference between a director appointed by a democracy and a dictator in the totalitarian sense. One is armed with plenary powers to carry out the intelligently conceived plans of a community, the other obtains power for its own sake by giving

a social sanction to the free expression of those wilder fantasies and deeper prejudices which it has been the business of nearly 2,000 years of civilization to tame and turn to useful social ends.—I am, etc.,

London, W.1, Dec. 26. H. W. S. WRIGHT.

Control of Lice in Shelters

SIR,—In your excellent leading article on "Unification of Shelter Control" (December 21, p. 873) you rightly call attention to the likelihood of the swift spread of lice-borne disease and indicate some of the measures to be adopted to prevent it. You omit, however, to mention the most important measure for preventing infestation—namely, the necessity for changing the clothes, especially the under-garments, at night and the regular washing of the underclothes. In peacetime body lice are rarely seen and are then found only in tramps and the inhabitants of common lodging-houses, who rarely change their underclothes. In the last war infestation with lice was high when the troops were compelled to wear their clothing for long periods at a time, but rapidly fell when they were living under more favourable conditions. Body lice live and breed in the underclothing, and, though nits may sometimes be found on the body hairs, this only occurs in heavily infested individuals. If the clothes are worn continuously temperature conditions are favourable for the rapid breeding of lice. If, on the other hand, the clothes are allowed to get cold for several hours each night, breeding is seriously interfered with and may even stop altogether. Washing of the garments further tends to reduce the chances of infestation. Cotton garments are as a matter of course boiled, and this will kill off all lice and nits. Unfortunately woollen garments cannot be boiled, but washing will mechanically remove the lice and most of the nits.

I venture to suggest that the vital importance of changing their clothes at night and of the regular washing of their garments should be impressed on all those who use shelters. The prevention of infestation is primarily a matter for each member of the community and not for the public authorities, and it is important that the public should be informed of this without delay and in no uncertain manner. On the public authorities rests the responsibility of dealing with already infested persons and of providing the necessary clothing and washing arrangements for those who have lost their homes.—I am, etc.,

London, W.1, Dec. 23. A. M. H. GRAY.

Removal of Nits

SIR,—It is stated in a note attached to the memorandum dealing with drugs used in dermatological practice drawn up by the Therapeutic Requirements Committee of the Medical Research Council (December 7, p. 795) that ". . . the nits can then be removed by a fine comb after the application of vinegar or dilute acetic acid." On the other hand, in an article entitled "The Control of Lice," by Prof. P. A. Buxton (November 2, p. 603), we read: "The legend that vinegar or acetic acid loosens nits and enables them to be combed out was disproved twenty-five years ago: it dies hard."

It seems a pity that a memorandum containing recommendations which are of interest to the majority of doctors should help to keep alive this legend.—I am, etc.,

Hornchurch, Essex, Dec. 27. PATRICK X. O'DWYER.

Air-raid Casualty Services

SIR,—Having been a member of both a first-aid post and a stretcher party since September, 1939, I was extremely interested in the editorial "Air-raid Casualties" (November 23, p. 716) and am sorry that it has not evoked more comment.

The article contains references to the work of the stretcher parties and of their difficulties in exercising proper judgment in the classification of casualties according to immediate need for first-aid treatment and priority of removal to hospital or F.A.P. under the adverse conditions of darkness, bombs, and the necessity for speed. Such references are in my experience (and that of my colleagues) quite true. Stretcher parties for the most part are quite unable to carry out the "pre-blitz" plans assigned to them, in which it was expected that they would be able to sort out, treat, and despatch casualties in a certain prescribed manner so that every injured person might be sent to the place at which the appropriate treatment necessary could be given at the earliest possible moment. As you state, the ghastly appearance of many, yet whose injuries are but minor, does suggest a hospital case, whereas treatment could be more conveniently given at a first-aid post. As a result of the disability to differentiate, almost all cases are sent straight to hospital, with little or no attempt at classification or priority of removal, while the first-aid posts and mobile units are used only to a very minor extent.

The need for accuracy in the sorting of cases according to immediate need for first-aid treatment and priority of removal, difficult though it is, is so important for the injured and the smooth working of the plans for their treatment that some steps must surely be taken to remedy the present position. A much greater use should be made of the medical profession; a doctor ought to be present at each incident if at all possible; as it is, I believe that many practitioners attend voluntarily and unofficially. The mobile units could also be used more frequently if their number were increased, the individual personnel of each reduced, and their equipment simplified. They could be sent out to each incident to return if not wanted or to remain and act as a classification centre if needed.

Even then the problem would not be solved, and the success of the present plans will still remain in large measure with the stretcher parties, on whom the main burden will still rest. In my opinion it is not possible to expect the stretcher parties to do their work efficiently unless more care is taken in the selection of personnel and their training is adequate to overcome the difficulties under which they are called to exercise their judgment in dealing with all types of injuries. Not the least of the errors of local A.R.P. organization has been the herding together of all types and conditions of men into stretcher parties without any real attempt at selection in accordance with ability, giving them eight lectures in first aid (in most cases from the British Red Cross or St. John Ambulance manuals, which have little relation to air-raid casualties), and then expecting that they can exercise a judgment that many medical men would hesitate to give under the conditions encountered.

I am sure that a much greater degree of efficiency, and a much closer approach to the intentions of those who planned the work of stretcher parties, could be obtained by a carefully planned selection of personnel into two sections—that is, stretcher bearers and first-aid workers, with special appropriate training for each based upon the experience of the past few months.

The first-aid section, chosen for their ability to make use, under adverse circumstances, of special tuition, would be trained to exercise to a much greater degree than at present possible that judgment so essential in rendering the most appropriate form of first aid, the initiation of anti-shock treatment, and in determining the order of removal and proper destination of casualties. Freed from the need of having to do any transporting, which would be done by the bearers, they would have more time to do the important work and to do that more effectively and speedily than is possible by less-trained workers, especially if they can work in co-operation with a doctor. It has to be remembered that, even if a doctor is present, his work is seriously handicapped unless the stretcher parties are highly trained, for he must rely to a great extent upon their judgment in either bringing the injured to him or indicating the position of those who need his services most; and any errors may lead to his attending to certain cases while someone else is bleeding to death a few yards away.

The stretcher bearers should be specially equipped and trained in the removal of all types of injury from wrecked houses and over debris, and I must emphasize that training in this respect still leaves much to be desired (*vide* many letters on the removal of the injured and shock), probably due to the fairly constant change of personnel owing to call-up for military service. There are plenty of opportunities for lifelike training among air-raid ruins. There is an appalling waste of good material in the stretcher parties as at present organized. Almost any doctor attached to or engaged in lecturing to them will bear out this statement that there are large numbers of the personnel who could, with suitable train-

ing, become extremely valuable assets in the difficult and responsible tasks of the stretcher parties, and I feel sure that the answer to many of the points raised in your article will, in part, be met by the suggestion put forward. No one would dare to question the courage or resourcefulness of the stretcher parties, but I can assure you that not many of them are satisfied with the present position, in which the most and best that they can do is to hurry all casualties off to hospital. Most of them would welcome being placed into the category for which they were best suited and given a training that would make them more efficient and able to render the assistance that they want to be capable of giving.

I enclose my name and address, not for publication, in case this letter be misunderstood and taken to be a criticism of the Borough Council that employs me.—I am, etc.,

Dec. 23. F.A.P. AND S.P.

London Air Raids

SIR,—There has been such an interesting response, both in your columns and in personal letters, to my letter (November 9, p. 643), that I am tempted into print again. My experience has been in an outer borough in the London region. We have in this area few factories and few high buildings: we have received probably between 60% and 80% of London's average damage in terms of tons of bombs per square mile.

Most of the control room duties of the medical officer of health can safely be delegated to a well-trained lay deputy, provided the M.O.H. can be contacted within a few minutes (which is possible via a wardens' post system wherever in the area he may go). It therefore seems proper for the medical officer to go out to any incident with numerous or trapped casualties without waiting to be sent for. He is likely to be valuable as a senior officer or as a doctor, or both. After bombs have fallen it should often be possible to decide soon and reasonably accurately which incident is more suitable for the mobile unit (or for the unit doctor with one or two assistants) and which for the M.O.H. In our own case geography often gives the answer. The control centre and mobile unit are near opposite ends of an awkwardly-shaped administrative area.

Several correspondents visualized the exact difficulty of giving morphine injections and had probably experienced it. It is often essential to prepare and give an injection in a really awkward position with one hand. The tubunic ampoule by Roche is an elegant and adequate answer. Alternatively a 1-c.cm. syringe with its piston ring intact (and therefore no tendency to empty under the force of gravity) can be stowed temporarily in one of the narrow cylindrical tins commonly used for diphtheria swabs, and put in a buttoned pocket.

One hears that in certain areas stretcher party men "wait on the pavement for their casualties" and will undertake no other activities of any sort. As regards air-raid action, I am convinced that the stretcher party leader, like the doctor, should be encouraged to reached trapped casualties at the first moment he can be of any use without dangerously obstructing the rescue parties. In the absence of raids and even during daytime "alerts" we have now received an official blessing for a most desirable practice—the assistance by up to about 50% of the stretcher party strength in clearance and salvage work. Most of the men are glad to do this once they realize its value, and I think the service would be improved if this work were put on a compulsory basis and grousers, if any, dismissed. One of the main difficulties in maintaining morale has been and always will be the provision of sufficient worth-while "fatigues." An unnecessarily large amount of floor scrubbing is better than everlasting ping-pong and darts, but it is a poor substitute for a proper day's work.

So far as I can ascertain, certain authorities accept and others refuse altogether the conscientious objectors sent to them by the tribunals. As tolerance is one of the things we happen to be fighting for, they are accepted here if they live in the area and vacancies exist. I am glad to be able to say that this has not led to difficulties with other personnel.

A large number of civil defence volunteers, full- and part-time, were persuaded, or ordered, rather against their own wishes, not to join the Home Guard on the ground that they could not properly undertake both responsibilities. They now look with envious eyes at the warm overcoats, boots, etc., of the H.G. (and, incidentally, the A.F.S.), and wonder why they are expected to undertake their own onerous and often dirty duties in their own clothing, or, at best, in an aged boiler suit and, with luck, a pair of gum-boots.

The following is quoted merely as one of many amusing but rather appalling examples of the results of divided control. We received verbal instructions many months ago that in stretcher party depots there ought to be an individual issue of three blankets per man. Recently I was able to obtain documentary backing for demanding this reasonable issue (but not, needless to say, the blankets). I have also received an instruction that the proper issue of blankets for a first-aid post is three blankets per bed for 75% of personnel on duty—that is, in our case 37½% of the proper issue per man for a depot. It is, or rather ought to be, surprising that the Ministry of Health is the more conservative in a matter of this kind.—I am, etc.,

Dec. 23. E. B. GROGONO.

The Mobile Unit in Action

SIR,—I have read with great interest Dr. J. J. Cremin's letter on the mobile unit (December 14, p. 847), and I endorse heartily his views, which I have held since the inception of the mobile unit. Quoting from the Ministry's Circular 1789: "The intention in using mobile units is partly to enable a complete first-aid medical unit to proceed to the actual site, there to set up, either in the shelter of any convenient building, or even, if the weather is fine, in the open air, and partly to reinforce the fixed aid posts. It is not proposed that first aid should be carried out inside these vehicles." It is exactly in these respects that the mobile unit will often fail in its object, as it failed in Dr. Cremin's case.

Trueta, in an address to the Royal Society of Medicine (*Proc. roy. Soc. Med.*, 1939, **33**, No. 1) stated: "Sometimes hindrance is due to defects in the organization itself, as happened in Barcelona when emergency treatment posts were set up inside ambulances." Again "... after the tragic experience of Barcelona I maintain that the immediate intervention of the surgeon in hospital is the only useful form of first aid other than the application of a tourniquet to the limb which bleeds excessively, and this can be applied by the ambulance man. The application of a splint, bandage, or other form of first aid has been shown in my city not only to be useless but actually harmful, because it always delays the surgical treatment."

Personally I have seen the mobile unit at practice in co-operation with the various A.R.P. services in mock raids, and I am of the opinion that they are a waste of time and personnel. I feel that it would be far better to employ a larger personnel of trained stretcher-bearers, who could work swiftly in co-operation with an adequate first-aid party, rapidly transferring cases to a fleet of speedy ambulances, which would proceed forthwith to hospital. This active body of first-aid workers under the direction of their squad leaders would be responsible to one medical officer and nurse, who, armed with morphine, should have reached the scene of activity in a small fast car, being summoned from the control room at the earliest possible moment.

Finally, I agree that it is reprehensible for "key" medical and nursing personnel to take part in the mobile unit. I know of one hospital where the medical officer in charge would be obliged to go out with the mobile unit, attend and supervise casualties, return to hospital to supervise admissions, etc., and then operate, being one of the few surgeons available in that district.—I am, etc.,

Barnsley, Dec. 18. ISAAC ROSE.

SIR,—A letter from Dr. J. J. Cremin (December 14, p. 847) expresses exactly the opinion we have come to from our experiences in this city. On the occasion of a recent air raid instructions were given from A.R.P. Main Control for one of our mobile posts to proceed to the scene of an occurrence where we were led to presume the presence of a considerable number of casualties. However, when the mobile post reached the scene the few casualties that had occurred were already cleared away to hospital. The second mobile post was sent out to the scene of another occurrence where one of our aiding

depots had been destroyed. Certainly there was no lack of casualties in this case, but the light from burning buildings proved, as it so often does, a target for further bombs, with the result that the mobile post was burned out and though there were no casualties among the personnel the unit was rendered useless. If they had been stationed at a fixed post I am of the opinion that their services would have been more valuable.

As a result of our experience we have decided not to replace the burned-out mobile post, but to disperse the personnel to strengthen those fixed posts where their presence is most needed. The mobile post is doubtless most valuable in a county to visit isolated villages, but it is difficult to envisage any situation in a city where it can prove of more value than the ordinary fixed post.—I am, etc.,

E. K. MACDONALD.
Leicester, Dec. 18. Medical Officer of Health.

Epidemic Influenza

SIR,—Dr. William Hartston (December 21, p. 878) dignifies with quotation marks a reminiscence of something he has heard me say, which was, probably, the epigram that when we don't know what we are talking about and don't care whether what we say is true or not we are talking pure mathematics. I dare say I explained what it meant. The great mathematician who originated it meant that, starting from *any* axioms and postulates not self-contradictory, the task of the mathematical logician was to deduce consequences which were *consistent*; whether the postulates were true and the consequences had any "real" meaning was beside the mark. Why Dr. Hartston thinks this is a sneer at mathematics or what it has to do with forecasting epidemics, Heaven only knows.—I am, etc.,

Loughton, Dec. 23. MAJOR GREENWOOD.

Convulsion Therapy in the Out-patient Department

SIR,—Dr. E. Cunningham Dax (December 21, p. 878) tells us that it was with foreboding that he anticipated the use of electrical convulsant therapy under out-patient conditions. I too may reveal the fact that I foresaw the kind of criticism that an account of the treatment would call forth; and, moreover, I prophesied that it would come from an experienced institutional psychiatrist.

Dr. Dax's letter, although it appears to deal solely with the question of electrical convulsant therapy, in reality reveals the wide gulf which, alas!, still divides psychiatry as it is understood and practised in the teaching hospital and consulting-room and institutional (asylum) psychiatry. The institutional psychiatrist, in the course of time, is apt to forget what the symptomatology and reaction-forms of really early mental disorder are like, and to think in terms of types rather than of individuals (Dr. Dax's own hospital caters for over 2,300 patients, I believe). By the time that the patient has been compelled to enter a mental hospital either as a voluntary or as a certified patient, his mental disorder is already far advanced; and within a few weeks of the patient's admission the psychiatric picture has changed: something has been added to his original mental disorder—the "asylum psychosis." Further, I believe that the consultant psychiatrist sees in the psychiatric department of a general hospital and in his consulting-room many patients whose mental disorders are even less advanced than is the case with those who find their way to the out-patient clinics associated with many of the more progressive mental hospitals.

The majority of cases of *early* mental disorder can be, should be, and in point of fact are, treated in out-patient clinics, consulting-rooms, and private nursing homes; any form of treatment which shows promise of being able to "stop the rot" or alleviate symptoms, thus reducing the mental hospital population, should be given a fair trial under out-patient conditions. Consider, for example, recurrent endogenous melancholia of the manic-depressive type: my mental hospital colleagues tell me that it is a relatively rare disorder, whereas I see several fresh cases a week. The reason is that only a small proportion find their way into the mental hospitals. Every such patient is a suicidal risk, admittedly; but it is a risk that every consultant psychiatrist must be prepared to take in the appropriate circumstances. I myself have been fortunate enough never to have incurred the loss by suicide of a depressive patient under my care, either in his own home or in a nursing home.

Dr. Dax's statement—"It seems unlikely that as good results will be given by treatment in the environment where the patient's illness began as when the patient is separated from his home surroundings"—is far too sweeping. In many cases of mild or early psychosis the individual attention which can be given by devoted relatives to the patient under the guidance of the consultant psychiatrist is infinitely preferable to the impersonal handling of a patient by mental nurses, trained or under training, in the 2,000-bed mental hospital.

Now to deal *seriatim* with some more points raised by Dr. Dax:

1. If the patients for treatment by electrical convulsion therapy under out-patient conditions are selected with care and skill, and their reactions studied week by week, none of the accidents mentioned in the second paragraph of Drs. Dax's letter need occur.

2. "Half to one hour is too short a time for rest following a fit": The fact remains that nearly all the patients so far treated have rested or slept for half an hour or so, and have then expressed themselves as ready and anxious to return home. The majority sleep unusually well the night following the fit. In my experience the same is true of many cases of idiopathic epilepsy. I agree that the same technique cannot apply in the case of chemically induced convulsions.

3. I cannot agree that the retention of clothing (with the exception, of course, of tight corsets) in any way restricts free movement. The amount of restraint employed in my department is merely sufficient to prevent the patient from falling off the couch or from injuring himself. It is an interesting fact that with the electrical apparatus the convulsions are very rarely so violent as those produced with cardiazol. So far, none of my patients has sustained a fracture or dislocation. If Dr. Dax includes under fractures those symptomless cracks in the bodies of vertebrae which are only discoverable by *x* rays, this last statement may be challenged; for I have not looked for them. I think it is mischievous that such fractures should be considered under the heading of "risks" when a patient's mental health is in question.

4. "The general hospital is not the place for even mild, uncomplicated mental illness." I cannot concur. I look forward to the time when every teaching hospital will have its properly equipped and adequately staffed psychopathic wards. Such is the laudable intention of St. George's Hospital, for instance, when it moves into new premises.

Finally, I should like to assure Dr. Dax that "the patient's welfare is the only consideration"—so much so that I am doing my utmost to save as many patients as possible from our overcrowded under-staffed wartime mental hospitals, even at the risk of a few psychiatric "accidents" of a kind which so far fortunately have not occurred.—I am, etc.,

London, W.1, Dec. 21. E. B. STRAUSS.

Haemorrhagic States with Snake Venom and Lecithin

SIR,—We have read with much interest the paper by Prof. L. J. Witts and Miss Felicity C. G. Hobson (December 21, p. 862). We have ourselves been carrying out experiments on closely related lines, the results of which are at present being prepared for publication. It is hoped that a full account of the work will be published in the *Journal*. Our results confirm the observation of Witts and Hobson that lecithin potentiates the action of Russell viper venom in the Quick test for prothrombin. When used with brain extract lecithin produces only a very slight decrease in the coagulation time. We have also been unable to determine any important accelerating effect in conditions of marked prothrombin deficiency. Our attention was originally directed to this problem by the observation of one of us (A. C.) that the presence of slight haemolysis in the plasma was associated with a decreased coagulation time as determined by Quick's method. The important point brought out by our own work is that the effect of slight haemolysis of the blood is more marked than the addition of lecithin. It is evidently not due to the presence of

haemoglobin in the plasma, since the addition of solutions of "crystalline haemoglobin" has no effect. We consider that it may possibly be explained by the liberation of lecithin from the envelopes of ruptured erythrocytes. Since the effect of even slight haemolysis may be very marked it is obviously of great importance that specimens of blood for prothrombin determinations shall be absolutely free from haemolysis.—We are, etc.,

Clinical Laboratories, Royal Infirmary, Edinburgh, Dec. 24. ANDREW CROSBIE. HAROLD SCARBOROUGH.

Recurrent Peptic Perforation

SIR,—The interesting account of a case of "recurrent peptic perforation" by Mr. Gavin Milroy (December 21, p. 868) brings to mind a similar experience of my own which occurred recently.

A man aged 53 was twice admitted to hospital as an emergency case and twice operated on for a perforated gastric ulcer. This happened within the space of one year and ten months. At the first operation the ulcer found was pre-pyloric in position and the suturing of the perforation so stenosed the lumen of the viscus that, contrary to my usual practice, I would have performed a gastro-enterostomy as well had the patient's general condition allowed of it. In the end things turned out satisfactorily without this additional procedure, and an *x*-ray report one month after operation stated "that there was no obstruction or delay in the passage of the meal into the jejunum." I had, nevertheless, intended to watch his further progress.

At the second operation a small perforation of a new ulcer high up along the lesser curvature was found. This was sutured with ease and the peritoneum drained as before. In both instances there was a short history of indigestion of seven days only before the perforations occurred. The patient was operated on twelve hours and two hours respectively after the onset, and on both occasions convalescence was uneventful. The patient was the sort of man not to seek medical aid until seriously ill, and despite advice did not return after his first experience. A further point of interest is that his brother died of "perforated duodenal ulcer" twelve months before the date of the patient's first attack.—I am, etc.,

London, E.3, Dec. 26. J. R. M. WHIGHAM.

Euthanasia

SIR,—Dr. Killick Millard (December 21, p. 881) is naturally pleased to announce the number of persons whom he has persuaded to support his campaign for the legislative sanction of voluntary euthanasia. Presented from the sentimental aspect his case has a quality of sympathetic appeal. Adhesion to it, however, has little value unless consideration has been given to the social and professional objections that have been advanced by representative speakers on behalf of the medical profession, and to state these objections is not the affair of Dr. Millard's organization. In these circumstances the mere quotation of numbers of adherents may possess some advertising value but is little likely to impress opinion within the medical profession.

Should the State authorize the practice of voluntary euthanasia it must needs appoint executive officers to administer the fatal draught. Doctors, whose purpose it is not to destroy life but to relieve suffering, may reasonably refuse to have this task imposed on them. I suggest that Dr. Millard's supporters, as a test of their convictions, might appropriately be asked whether they are willing personally to volunteer for this painful service. He is but a feeble disciple whose record is one of faith without works.—I am, etc.,

Hove, Dec. 23. C. O. HAWTHORNE.

Some Points about Stretchers

SIR,—I notice with concern that District Councils tend to use A.R.P. fitments even in their "non-A.R.P." ambulances. This matter needs serious consideration.

The discomfort of the A.R.P. stretcher may be remedied by covering it with a thick mattress of porous rubber, and the sharp upward projections of the stretcher carrier fitments, so apt to cause injury, can be cut down or encased in wood.

Other troubles, however, must arise, since the time-honoured comfortable canvas stretchers will usually not fit the A.R.P. stretcher carrier guides. The Army stretcher (6 feet between runners) will go on only if the stretcher carrier is fitted sufficiently far aft in the ambulance. The St. John stretcher, with its narrower width, 22 inches or less between runners, will fall through if placed on the guides, and this same serious criticism applies in the case of railway ambulance stretchers (L.M.S. was tried) and the police stretcher. Wider angle-iron guides would be required to take these stretchers, and it would be well to be prepared for what might be an awkward situation.

Is it sound policy, however, to throw over the product of generations of stretcher experience for the sake of a very hypothetical facility in gas decontamination? For the latter two years of the last war mustard gas shelling was practically an everyday experience to regimental medical officers. I cannot recollect that decontamination of stretchers was other than a minor preoccupation.—I am, etc.,

Denbigh, Dec. 22. D. G. DUFF.

Treatment of Burns

SIR,—Surely what we want to teach the public and first-aid workers in regard to the treatment of burns is something simple, easily obtained and easily applied, and efficacious. The controversy raging at present is only adding to confusion. Tannic acid and/or silver nitrate, the treatment *par excellence*, is not only difficult to apply in ordinary circumstances, but also dangerous in unskilled hands. In hospital it is the ideal treatment, but in a back kitchen or even in a first-aid post with a rush of casualties the detail calls for time, experience, and special facilities.

My experience has taught me to follow a strict course:

(1) Treat the shock, no matter how slight the injury may seem. For first aiders and others in that category this is best done by: (*a*) Laying the patient flat. (*b*) Application of warmth (blankets, hot-water bottles, etc). (*c*) Fluids *ad lib.*, even if it is ordinary water (lukewarm). No attempt is to be made to deal with the burn until the general condition has improved. The doctor must give morphine, or tinct. opii (according to age), or pot. brom. (for small babies).

(2) Cover the burn with a piece of dry lint and bandage lightly.

(3) Remove to skilled attention.

The special treatment I use and advocate after (1) is to soak a piece of gauze (or lint) in a solution of flavine and paraffin 1 in 1,000. *Do not squeeze*, and apply to the burn and bandage lightly. I have had excellent results in all degrees of burns from this line of treatment. The flavine and paraffin immediately soothes the injured area and the raw nerve endings, thus preventing further shock. The colder the solution the quicker the relief, and no increase of shock; in fact, I usually pour it on and cover with gauze. I have not yet seen a case of sepsis following treatment with flavine and paraffin. The solution reduces greatly the chances of secondary shock; it is easy to apply and it is cheap. I usually repeat the dressing once in twenty-four hours, dress once daily for three days, then once every two or three days, depending on the amount of inflammation present.

Blisters are *not* opened until twenty-four hours after the application of the first dressing. Primary and secondary shock have by then been overcome, and the antiseptic value of the solution has had time to affect the area and surrounding skin. The blisters, when opened, are done so under as aseptic conditions as possible. Once the inflammation has subsided elastoplast strips complete the granulation process. I have found that the combination of flavine and paraffin followed by elastoplast greatly reduces skin contracture.

Where the burn has been of extreme severity and/or important locale the case is referred to hospital after treatment of primary shock. I still apply flavine and paraffin to the burn because of the immediate relief locally. Cleansing of the area in hospital will, I presume, be conducted under an anaesthetic, and the journey to the hospital is rendered as free from pain as possible.—I am, etc.,

Brighton, Dec. 18. LEONARD A. DE DOMBAL.

First Hospital for Diseases of Women

SIR,—I read with great interest the excellent article on J. Marion Sims by Prof. Chassar Moir (December 7, p. 773). In it he concludes that the hospital founded by Sims in New York in 1855 was "the first hospital, in the modern sense of the word, to be devoted to the treatment of diseases of women, and it thus marks the origin and recognition of gynaecology as a medical specialty in its own right." The credit for the earlier establishment of an institution for the treatment and study of gynaecology must go to London, and in particular to Dr. Protheroe Smith. In 1842 (I quote from the early records of the Hospital for Women, Soho Square) "the expediency of having a hospital for the exclusive reception and treatment of poor women afflicted with diseases peculiar to their sex . . . having been brought under the consideration of several gentlemen resident in London by a member of the medical profession . . . a provisional committee of noblemen and gentlemen was formed in the month of August of that year." The hospital thus inaugurated was opened in Red Lion Square on January 25, 1844. Ten years later the Hospital for Women moved to Soho Square, where it still stands, and is thus the oldest hospital in the world to be devoted exclusively to gynaecology.—I am, etc.,

London, W.1, Dec. 20. W. R. WINTERTON.

Treatment of Stomatitis in Children

SIR,—I find that the following mixture is effective in the treatment of stomatitis in infants; both the local lesions and the pyrexia subside in three or four days. I think that the mixture works fairly well even if it is spat out. For a child of 3:

℞ Pot. iodid. ... ... gr. j
Liq. hydrarg. perchlor. ... ... ♏ vijss
Glycerini ... ... ♏ x
Aq. fontis ... ... ad fl. dr. j
q.q.h.

The local treatment described in the annotation in the *Journal* of December 14 (p. 838) is extremely difficult to do for refractory infants. In adults and older children I have found local treatment with liq. arsenicalis or sol. acriflavine 1 in 1,000 effective.—I am, etc.,

Coventry, Dec. 18. DONALD FROST.

Tetanus and the Need for Prophylaxis

SIR,—Perusal of the correspondence on the use of tetanus antitoxin leads me to the surprising deduction that in the past it has not been in regular use as a prophylactic in all London hospitals. For many years every casualty with an open wound admitted to the wards of the Northampton General Hospital has received tetanus antitoxin on admission. During this period a number of cases of tetanus, mostly fatal, have been admitted, but I have never seen the disease arise in a patient who has been given antitoxin. In 1918 a soldier fell from his bicycle and sustained a slight wound of the leg. He was admitted to an auxiliary hospital, developed tetanus, and died. The house-surgeon, when questioned, stated that the man had not been given the usual dose of antitoxin because he was not suffering from a gun-shot wound. It appears that the point of view of that house-surgeon is not so unusual as I thought.—I am, etc.,

Northampton, Dec. 19. C. C. HOLMAN.

SIR,—Messrs. W. McAdam Eccles and Frank Coleman (December 14, p. 846) seek to elicit information as to the use of tetanus antitoxin in England and Wales for casualties with open wounds. This question and that of Dr. H. H. Sanguinetti (November 23, p. 720) as to the occurrence of tetanus from London soil and the advisability of giving tetanus antitoxin in all cases of open cuts or wounds where there is a possibility of contamination by soil are answered by Drs. V. H. Addison, A. R. Nettleton, and J. E. G. Earle (December 14, p. 847).

I was attached in the autumn of 1914 to a French hospital at Dinard which received in special wards all cases of tetanus coming from the French Army from the battlefields along the River Marne, where, as stated, the soil is much cultivated and market gardens for Paris existed. These cases of tetanus had received no tetanus antitoxin, and, indeed, treatment had been unavoidably delayed. Similarly, in September, 1914, several, mostly fatal, cases of tetanus were treated in No. 1 General Hospital at St. Nazaire in Brittany, where my wife was nursing, among the British troops after their retreat from Mons.

Tetanus is truly a "horrible disaster," but it need hardly occur, for I can confirm Messrs. McAdam Eccles and Coleman's statement that a "dramatic lessening" of cases and of the death rate was brought about by the introduction of tetanus antitoxin, at any rate over-seas, during 1914 to 1920. Hence I suggest that there is past and present evidence to warrant that the instructions in Section 15 of E.M.S. Memorandum No. 4 for England and Wales that "tetanus antitoxin should be given to all casualties with open wounds" should be strongly advised and be carried out when the possibility of contamination of such cuts or wounds by soil exists.—I am, etc.,

Woking, Dec. 16 F. G. BUSHNELL.

Dangers of Sulphapyridine

SIR,—I cannot agree with Dr. W. F. Corfield in his statement (November 16, p. 682) that sulphapyridine soluble can be given into the gluteal muscles without any particular precautions. If given subcutaneously ulceration of the skin with a persistent sinus results. If given deeply there is a grave danger that one of the larger branches of the sciatic nerves is involved. I have seen six cases of foot-drop with varying degrees of anaesthesia result from this accident. Although most cases showed varying degrees of recovery, often with intensely painful muscles, one case showed almost complete foot-drop after three months. Another case developed gluteal paresis, so that he was unable to fix the pelvis three months after receiving the injection. Children seem particularly liable to develop gluteal weakness owing to the motor nerve being partially or completely destroyed. So long as the affected muscle shows a response to faradism a nearly complete recovery appears to take place. Unless there is a good and plentiful blood supply to the part injected no absorption takes place, so that destruction of the near-by tissue begins. Microscopically, at first, there is what appears to be a hyalinization of the cells where the solution has reached. If the blood supply is good the fluid is absorbed and the cells ultimately recover, but if the blood supply is bad the cells undergo necrosis and later fibrosis.

I consider that 3 c.cm. is the maximum amount that should ever be used in one place at one time, because the body is unable to absorb more, and instead of its being absorbed the tissues are destroyed. Three c.cm. is probably a dangerous amount to give to a child. Intramuscular sulphapyridine should, I think, only be given in an emergency while arrangements are made for giving it by the intravenous route if for any reason the patient cannot absorb the drug from the stomach or if a high concentration is required. Though crippling dangers are at present rare, this is no excuse for not knowing that they may occur, especially when with the increasing use of the intramuscular route in inexperienced hands they will become more common.—I am, etc.,

A. W. FRANKLAND,
Nov. 22. Lieutenant, R.A.M.C.

Rationalization of the British Drug Industry

SIR,—Your annotation with the above title (December 21, p. 875) really deals with two subjects—the nomenclature of new drugs and a proposal for rationaliation of the drug industry by nationalization or by the formation of a British version of the I.G.F. To advocate nationalization is a trifle dangerous if the British Medical Association is to continue to oppose application of the same principle to the medical profession. The idea of a financial merger is being freely canvassed at the present time by industrial interests that hope to control the combine.

But, leaving the realms of high finance and speaking as a member of the medical profession, I believe that most doctors will agree that the multiplication of proprietary synonyms is to be deplored: and the B.M.A. will have solid support for

any steps they may take to put a stop to this unfortunate practice. On the other hand there may be many in the profession who will regard as ungenerous the fact that you give a German firm credit for the drugs they gave the world, while you suppress the name of the only British firm that can claim to be associated with the production of "sulphapyridine, sulphathiazole, and the new trypanosomicidal drugs of the guanidine and amidine class."

The *Journal* has consistently preferred to use the American term "sulphapyridine" to describe the drug discovered by a British firm of manufacturing chemists, and yet the *Journal* uses the name "Bayer 205." Whatever the reason for such discrimination, I am satisfied that the medical profession as a whole will prefer to remember the name of the firm which gave the world M & B 693.—I am, etc.,

May and Baker, Ltd.,
Dagenham, Dec. 27. ROBERT FORGAN.

Obituary

RAYMOND PEARL, Ph.D., LL.D.

Professor of Biology, Johns Hopkins University

We regret to announce the death of Prof. Raymond Pearl, who since 1930 had been Professor of Biology, School of Hygiene, Johns Hopkins University.

Raymond Pearl was born at Farmington, New Hampshire, U.S.A., in 1879. After taking his A.B. at Dartmouth College in 1899 he worked in many universities, including the University of Leipzig and University College, London, where he was from 1905 to 1906. From 1918 to 1925 he was professor of biometry and vital statistics in the School of Hygiene, Johns Hopkins University, where he was also professor of biology in the School of Medicine and director of the Institute of Biological Research. He was Heath Clark Lecturer at the University of London in 1937. He made numerous contributions to scientific literature, and was editor of *Human Biology*. We are indebted to Professor Major Greenwood, F.R.S., for the following appreciation.

A letter from Baltimore brings me the news of the death from coronary thrombosis of Raymond Pearl. His many friends in England will find it hard to realize the extinction of that buoyant personality, the very image of physical and mental vigour, a man of 61 who could have passed for 40.

Pearl was a pupil of Karl Pearson in 1905–6. His earliest work was biometric in the strict sense of the term—a study of paramoecium—and followed by an equally careful and laborious study of human brain weights. Then he did important work on the genetics of poultry in Maine. I first met him in 1917 or 1918, when he was in England as a member of Mr. Hoover's staff. In 1918 he became the first professor of biometry and vital statistics in Johns Hopkins University; later he exchanged this post for the chair of experimental biology. Pearl was primarily a biologist, but his cultural background was wide; he knew and loved the best books in ancient and modern languages, and in a charming little book (*To Begin With*) tried to humanize the outlook of young students of science.

It is common form in literary circles to sneer at the literary crudeness of scientific writers. If we conveniently ignore such men as Huxley, Tindall, Helmholtz, and Karl Pearson, there is enough truth in the generalization to sting. Pearl had command of an admirable prose style informed by wide reading and a sense of humour. As the demand for books and papers is much greater in America than here he was tempted to write very often, and so led occasionally to overstatement, to the delight of pedants—the kind of people who rejoice over a mistake in Macaulay. Those who have had, and resisted, the same temptation may cast stones. His output was so large that even in a formal notice a good deal would not be mentioned; in a personal tribute it is permissible to speak only of what seemed to the writer both characteristic and first-rate. I should give first rank among his books to *The Rate of Living*, published in 1928; it is a small book but epitomizes the work of years. Pearl first used the method of experimenting on populations—now familiarized by the mouse colonies of experimental epidemiologists—and worked on the fruit fly *Drosophila*. He was the first biologist to compute from adequate data orders of dying out, or life tables, for any animal but man. Pearl pointed out that if we wished to study the general relation of age and mortality we should begin at the age at which mortality is at a minimum—namely, after the troubles of immaturity have been surmounted (in man at about age 12, in insects at the imaginal stage). Pearl's work is open to minor technical objections, but is of great interest, and will, one hopes, be continued. In later years he gave much of his energy to the study of human population growth; important as this has been it is not, at least to me, so fascinating as the *Drosophila* researches. One feels that he may have been near that elusive sprite, a genuine "law" of mortality.

Pearl was not a particularly eloquent lecturer, but he was a great and inspiring teacher, beloved by those who worked with him and large-minded enough to encourage those working on subjects or along paths which did not attract him. To those who only met him casually he may sometimes have seemed a trifle cynical ("hard-boiled" is, I believe, the idiomatic term). Actually he was one of the kindest of men, and took immense pains to be of service to others. Indeed it is as a humanist that I now think of him. He did fine scientific work, but his personal influence on friends and pupils may well have benefited science more than his direct contributions to it. He broadened the outlook and raised the courage of all who came under his influence. It is very hard for a pure Cockney like me (in a life of more than sixty years I have never passed more than three consecutive months at a greater distance than twelve miles from Shoreditch Church), when he thinks of an American, *not* to picture a thin man with a cigar in the corner of his mouth talking about dollars in a nasal voice and always in a hurry. But in my case this phantasm is at once dispelled by the gracious image of a cultivated gentleman who loved to talk *at leisure*, over a glass of wine, about men, women, and books. That was Raymond Pearl.

WILLIAM WALLACE, M.D., F.R.A.M.

Dr. William Wallace, who recently died at the age of 80, was well known as a composer and writer on musical subjects. He was educated at Fettes College and Glasgow University, where he qualified M.B., C.M. in 1885, proceeding to the M.D. in 1888. After qualification he was house-physician and house-surgeon to the throat department of the Royal Infirmary, Glasgow, and subsequently, for two years, house-surgeon to the Eye Infirmary, Glasgow. In the last war he served as a temporary captain in the R.A.M.C. and was ophthalmologist to the Colchester Military Hospital and Inspector of Ophthalmological Centres in the Eastern Command. Among his medical publications was an article in the *R.A.M.C. Journal* in 1921 on methods of examining the vision of recruits and soldiers. He pursued his second profession—that of music—with unabated interest from the eighteen-nineties till the beginning of the war of 1914–18. His early orchestral work, "The Passing of Beatrice," was first produced at the Crystal Palace in 1893. In a series of orchestral tone-poems one of the most famous was "Villon." Dr. Wallace was the author of several works on musical subjects, and his versatility is shown by the fact that he also contributed articles on Greek typography to the *Journal of Hellenic Studies*. He had, as well, a high degree of skill as a painter, and a hundred of his water-colour drawings of injuries to the eye are preserved in the Army Medical War Museum.

Medical Notes in Parliament

The Nation's Bread in Wartime

Replying to a request by Lord Strabolgi on December 19 in the House of Lords, Lord WOOLTON made a statement regarding bread. He said the bakers had never failed to provide the bombed areas with bread. The Government had arranged to give for three months a subsidy equal to ½d. on the quartern loaf, payable on all bread sold at 8d. per quartern or less. He had arranged with the bakers that they would supply at the same price either a white bread or a wholemeal bread. He had decided on an 85% extraction for wholemeal flour. This wholemeal would be supplied at the same price as "national straight run" white flour, and would contain the necessary quantities of vitamin B_1. The virtues of wholemeal bread had been known to the public and widely advertized for years, but the quantity of bread made from high-extraction flour was only a little over 8% of the bread consumption of the country. Most people did not like to change habits or did not like the bread. He could not insist on the public eating wholemeal bread, but drew public attention to the advantages which those who ate it were likely to obtain. Public interest had been roused about the fortifying of white bread. For some four years before the war the flour-milling industry of this country had spent money on research for the best means of remedying the recognized deficiency of white flour in vitamin B_1. They found a means of introducing it into white flour without affecting the appearance, the baking, or the keeping. The Government considered a report on this matter by its Scientific Subcommittee. It asked him to secure that white flour was fortified with vitamin B_1 and concurrently that wholemeal bread was available to all the public who wanted it. Supplies of vitamin B_1 would not be available in any quantity until the spring of 1941—probably in May. The committee also drew attention to the importance of the addition of certain calcium salts to flour. The printed literature of the Ministry of Food would continue to advocate the virtues of wholemeal bread for those who found it a suitable diet.

Lord BALFOUR OF BURLEIGH said that from the earliest days of the war the Medical Research Council gave the question of bread attention. It decided to recommend that bread should be made of an extraction of the wheat grain of not less than 80% to 85% in order to contain the germ, as much as possible, of the aleurone layer, and the finer portions of the bran. A further recommendation was that a small percentage of calcium salt should be added to this flour to overcome the defect of bread, especially of bread made from a high-extraction flour, of preventing the utilization of calcium by the body. The addition of calcium would increase calcium retention, to allow better bone and tooth formation. The Medical Research Council found that calcium deficiency had long been a defect of nutrition among people in this country. This deficiency had especially to be overcome in the poorer sections of the community which had difficulty in obtaining the protective foods, milk, cheese, and vegetables. The Medical Research Council thought everybody ought to eat wholemeal bread, but recognized the difficulties Lord Woolton had pointed out. There was immense popular prejudice. The Council would cordially approve the addition of vitamin B to the 70% extraction flour. This would make that flour better, but the Council did not think that even with the addition of calcium and vitamin B it would be as good as the 85% extraction flour. The latter would not make brown bread, but bread of an "off-white" colour.

Lord WOOLTON added that the high-extraction flour would be available to housewives. He would continue to rely on the scientists who had given the results of their research on this problem. It might become necessary to press hard for the consumption of high-extraction flour to save shipping.

Fortified White Flour

In reply to Mr. De La Bère on December 18, Major LLOYD GEORGE said an advisory committee including scientists and representatives of the various trade and other interests involved had been appointed for consultation on administrative and technical questions in connexion with the introduction of synthetic vitamin B_1 and calcium into white flour. The committee had held two meetings and made recommendations on matters of principle and detail. At the same time negotiations had been proceeding with manufacturers and potential manufacturers of aneurin. It was expected that the distribution of fortified flour on a national scale would commence next spring. No monopoly would be given to a particular firm.

Surgery Hours and the Black-out

On December 19 Captain PLUGGE asserted that panel doctors had in many cases made no attempt to adjust their consulting hours to black-out conditions and that in consequence very few insured persons attended evening surgeries. Mr. MACDONALD answered that at the outbreak of war his Department recommended insurance committees to review the arrangement of surgery hours, having regard to the restriction of lighting and other war conditions. He had no reason to think there was any general dissatisfaction as to surgery hours, but he would inquire into any complaint which might be brought to his notice.

Sir ROBERT YOUNG suggested on the same date that the early closing of chemists' shops made it difficult for persons working to 5.30 or 6 p.m., who had to visit a doctor, to get the medicine prescriptions made up before the shops closed. Mr. HERBERT MORRISON replied that the general closing hours for shops did not apply to the sale of medicine, and so did not prevent chemists from making up doctors' prescriptions at any hour in the evening. Chemists who dispensed national health insurance prescriptions were obliged to be available for service until the hours fixed by the local insurance committee, who had regard for the needs of workers in the locality. He had received no evidence of hardship resulting from chemists closing earlier on account of the black-out and air raids.

Mobile First-aid Units

Replying to Mr. Brooke in the House of Commons on December 19, Mr. MACDONALD stated that the average number of occasions on which a mobile first-aid unit had been sent to an incident in London during October and November was 4.4. In addition the doctor, usually accompanied by a nurse, had been sent out without the rest of the unit on 5.3 occasions on the average, making a total of approximately 10. Up to the present these units had been used rather less than was expected, but their use, which had proved of great value, must depend upon the nature of the incidents. The nursing personnel were available to help in the work of the hospital or first-aid post on which the unit was based, and to reinforce neighbouring first-aid posts when necessary.

Immunized Persons as Disease Carriers

Asked by Mr. Groves if he had considered the danger of persons immunized against diphtheria and enteric fever becoming carriers of the germs of these diseases, Mr. MACDONALD replied on December 19 that when a majority of the child population had been immunized against diphtheria the danger which Mr. Groves apprehended would for all practical purposes disappear. There was no evidence that a community a portion of which had been immunized against enteric fever contained a greater proportion of carriers than one not so immunized.

Replying on the same date to Major Heilgers, Mr. MACDONALD said the immunization of children against diphtheria in the large numbers which he desired could be most expeditiously achieved by means of sessions at selected places, where children could be assembled in convenient numbers. The free supply of material to local authorities was in a form convenient for this, and not for distribution to private medical practitioners. Major HEILGERS further reported that there appeared to be a shortage of diphtheria toxoid at the Ipswich Emergency Laboratory. Mr. MACDONALD said all demands which had been made on this laboratory would be met within the next few days. The stocks at present held by the laboratories were generally sufficient to meet current requirements, and provision had been made for further substantial supplies as required.

Medical News

Air Vice-Marshal H. E. Whittingham, C.B.E., has been appointed Director-General, R.A.F. Medical Services, Air Ministry, from March 1, in succession to Air Marshal Sir Victor Richardson, K.B.E., C.B.

Dr. Robert D. Defries has been appointed Director of the School of Hygiene and of the Connaught Laboratories, University of Toronto. During the past twenty-five years he has been prominent in the work of these two institutes, having early in 1915 become actively associated with the late Dr. J. G. FitzGerald, whom he now succeeds.

A meeting of the Society for the Study of Inebriety will be held at the Medical Society of London, 11, Chandos Street, W., on Tuesday, January 14, at 4 p.m., when Dr. George B. Wilson will present a paper on "A Seventy-five Years' Survey of the Liquor Problem in Great Britain."

The B.B.C. announces that from January 6 to 10 a series of special health talks for schools will be given each morning at 11 a.m. on how germs spread; the body's defences; cleanliness and health; cool heads and warm feet; sleep and rest.

A meeting of the Shaftesbury Military Hospital Medical Society will be held at the hospital on Tuesday, January 7, when clinical cases presented by members will be on view from 2.30 p.m. to 3 p.m. A discussion will follow.

Canada, states the *Daily Telegraph*, is to set up a blood "bank" to provide transfusions for 20,000 military and civilian casualties. The Canadian Government will provide all equipment and meet the running costs of the scheme.

According to a report in the *Times* the American Red Cross is sending to this country sufficient material to immunize 1,000,000 children against diphtheria. In response to an appeal from the Ministry of Health one-fifth of this—that is, material for immunizing 200,000 children—is arriving by air; the remainder is following by sea. It is stated that the Ministry of Health aims at immunizing at least 5,000,000 children before the beginning of the diphtheria season. There are in this country some 11,500,000 children under 15 years of age.

The New Year Honours List includes the award of the O.B.E. (Civil) to Mr. Edward Thomas Both of Adelaide, South Australia, the designer of the artificial respirator which was adopted by Lord Nuffield for distribution among the hospitals of the Empire.

Dr. H. Douglas Singer of Chicago has been elected president of the American Neurological Association.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

FINAL M.B.—*Part II (Principles and Practice of Physic, Pathology and Pharmacology):* W. W. Brigden, W. R. Burkitt, O. Clarke, R. E. W. B. Comerford, J. G. Craddock, G. E. H. Enderby, M. A. Fawkes, J. S. Hesketh, A. Holmes-Smith, D. J. Howell, D. M. Jackson, F. S. Jackson, D. W. M. James, E. J. C. Kendall, D. Laing, L. A. Little, I. B. Mackay, W. B. D. Maile, A. Maples, P. F. Milling, R. Morton, A. G. E. Pearse, F. T. G. Prunty, L. Read, T. W. Rowntree, W. M. Scott, C. S. N. Swan, D. E. Thompson, R. C. Tufton, D. N. White, F. A. Whitlock, J. O. D. Williams, F. J. Y. Wood. *Women:* M. Redfern Davies, R. M. Stevenson.

UNIVERSITY OF BRISTOL

The following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—N. F. W. Brueton, Gwendolen M. Higgins, Megan E. Jones, J. M. Joshua, J. K. Lewis, T. E. Lloyd, H. Mullen, P. W. J. Searle, R. D. R. Shanks. *In Group I (completing examination):* G. H. Harvey, J. W. J. Newton, D. A. Squire. *In Group II (completing examination):* Winifred M. Curgenven-Robinson, Clara J. Fraser, Ruth M. Hunter.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh, held on December 17, with Dr. H. M. Traquair, President, in the chair, the following candidates, having passed the requisite examinations, were admitted Fellows:

L. H. Aitken, A. S. Dill-Russell, C. J. H. Gibson, C. Latto, C. T. Moller, Elizabeth McCallum, G. D. McDowall, I. A. M. MacLeod, M. S. Nirankari, H. Wapshaw.

The Services

ARMY AWARDS

Military Cross

The M.C. has been awarded to Major Walter Dalgleish Jackson and Lieuts. Ronald Rodger Gordon and Martin Turner Read, R.A.M.C., in recognition of gallantry in France and Flanders; and to Lieut. John Graham Lord, R.A.M.C., in recognition of gallant conduct in action with the enemy.

Mentions in Dispatches

The names of the following have been brought to notice in recognition of distinguished services in connexion with operations in the field, March to June, 1940.

Commands and Staff: Major-General J. W. L. Scott, D.S.O.; Colonels R. Errington, C.B.E., M.C., T.D., C. L. Franklin, M.C., A. Hood, C.B.E., E. M. O'Neill, D.S.O., A. C. Searle, M.C., and S. G. Walker; Lieut.-Colonel (Acting Colonel) J. C. A. Dowse.

Royal Army Medical Corps: Lieut.-Colonels S. Arnott, D.S.O., J. W. Hyatt, A. R. Barlas, J. H. Ward, D.S.O., M.C., C. H. K. Smith, M.C., D. McVicker, M.C., F. G. Flood, M.C., A. Bremner, G. G. Drummond, W. A. Ramsay, T. Parr, R. E. Rees, M.C., K. A. M. Tomoroy, and W. H. Marston; Majors (Acting Lieut.-Colonels) L. C. Lade, J. H. Bayley, M.C., and E. P. N. Creagh; Captains (Acting Lieut.-Colonels) C. R. Sadler and H. L. G. Hughes, D.S.O., M.C.; Major (Temporary Lieut.-Colonel) W. M. Cameron, O.B.E.; Majors J. G. Black, J. A. Brocklebank, R. G. Evans, F. A. Donolly, W. E. Underwood, J. Houston, J. Boyle, G. Punshon, A. R. H. Champion, A. E. King, L. B. Stott, J. D. W. McCracken, H. F. Wattsford, Y. Moore, O. D. Jarvis, O.B.E., D. A. O. Wilson, E. I. B. Harvey, A. D. Bourne, G. R. McNab, R. T. P. Tweedy, W. B. F. Orr (since deceased), A. D. Davidson, S. A. Maddocks, J. E. Morrison, St. C. E. J. Barrett, A. D. Briscoe, F. B. Mackenzie, D.S.O., M.C., and D. N. Nicholson; Captains (Acting Majors) J. H. J. Crosse and A. G. Whitfield; Lieuts. (Acting Majors) A. C. Stevenson and D. P. McCoy; Lieut. (Temporary Major) D. M. Jones; Captains F. Murray, W. G. Bateson, I. B. Pirie, O. M. Walker, W. H. Valentine, W. O'Callaghan, R. Rutherford, F. V. Allen, P. E. Cresswell, L. Evans, and F. J. Henderson-Begg; Lieuts. (Acting Captains) H. W. Beetham and J. A. Farrell; Lieuts. R. C. Little, D. I. McCallum, A. S. C. Hobson, J. W. Landells, J. W. Dowzer, P. K. Walker, R. Bevan, C. E. Stuart, J. P. Lane, J. G. Munro, F. R. Store, J. C. Taylor, P. Louis, K. D. Moynagh, D. H. Jones, C. Hope, W. H. Hylton, M. R. Grace, C. D. Preston, F. J. D. Webster, C. D. Anderson, J. A. Farfor, M. R. Joseph, G. H. Scoular, E. Cullen, A. T. Blair, R. MacKay, M. W. Paterson, G. S. Sheill, W. G. J. Gordon, J. H. Rose, N. C. Rodgers, J. J. Hogan, M. Herman, and L. H. Crosskey.

The names of the following have been brought to notice in recognition of distinguished services in connexion with operations in Norway.

Commands and Staff: Colonels G. A. Blake and P. H. Mitchiner, C.B.E., T.D.; Lieut.-Colonel (Acting Colonel) W. E. Tyndall, M.C.; Major (Acting Lieut.-Colonel) A. J. Beveridge, O.B.E., M.C.; Captain (Acting Major) R. O. Brooks.

Royal Army Medical Corps: Captain (Temporary Major) J. Bruce; Lieuts. A. E. Loden and A. E. Burgess.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Past and present members of the Liverpool Medical School will learn with regret that Probationary Surgeon-Lieutenant BEN HAROLD BRINDLE, R.N.V.R., was among those who lost their lives when H.M.S. *Forfar* was sunk by enemy action. He joined the R.N.V.R. only a few weeks ago, after returning from a voyage to Australia as ship surgeon. After graduating M.B., Ch.B. at Liverpool in June, 1938, he was resident for a time at the David Lewis Northern Hospital and at Walton

Hospital, Liverpool. The sympathy of the profession and especially of those members, many of whom are in the Services, who belonged to his year at Liverpool, will go out to his mother, his fiancée, and to his brother, Major W. S. Brindle, R.A.M.C., in their tragic loss.

ROYAL ARMY MEDICAL CORPS

Wounded

Lieut. Robert Elmer Horton.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Increases were recorded in England and Wales during the week in the incidence of diphtheria, measles, and whooping-cough, and of cerebrospinal fever, enteric fever, and dysentery. All these diseases, and also scarlet fever, pneumonia, and acute poliomyelitis, are more prevalent now than they were during the corresponding week last year; in some instances the increase is only slight. The incidence of most of these diseases has been rising steadily in the last few weeks, and this might cause disquiet were it not for the fact that cases of diphtheria and scarlet fever are fewer in number than they were in the last "normal" year—namely, 1938. Comparable figures for measles and whooping-cough are not available.

Although the position as regards incidence for the country as a whole is still favourable, new factors have raised new problems which the usual measures of disinfection and isolation fail to meet. The evacuation of large numbers of susceptible subjects to areas hitherto more or less immune from infectious diseases in other than sporadic form increases the risks of spread, but if to this are added overcrowding in billets and inadequate hospital accommodation for suspected or manifest cases, then sooner or later the resources of the reception areas will be overtaxed. Although there have been no serious outbreaks of enteric fever so far, the risk of pollution of water supplies by air-raid damage to the drainage system has led to increasing inoculation against this disease. Little attention has been paid to whooping-cough, although protective measures are available, because so far the incidence has been comparatively low and the attack generally benign.

As regards measles, no reliable method of active immunization has yet been devised, and the physician must therefore wait until there has been exposure to the disease (unless deliberate exposure is practised) before the modifying effect of immune measles serum can be conferred. For this purpose serum from adults, such as that which is being collected from donors for the E.M.S. blood or serum "banks," could, if necessary, be made available in reception areas as the need arises. For temporary protection of selected individuals in whom an attack of any kind might be detrimental convalescent serum is the only consistently reliable agent, although some preparations of placental extracts have yielded good results.

The incidence of diphtheria in the week under review is highest in: Lancaster 275 (Liverpool 94, Manchester 24, Salford 18, Bolton 13, Bootle 12, Wigan 10, Widnes M.B. 10); Glamorgan 147 (Swansea 64, Cardiff 10, Aberdare U.D. 10, Mountain Ash U.D. 8, Llantrisant and Llantwitfardre R.D. 8, and from 1 to 7 in 16 out of the remaining 19 urban and rural districts); Yorks, West Riding, 132 (Sheffield 29, Bradford 15, Leeds 8, and widely scattered in smaller administrative areas); Devon 70 (Plymouth 37, Exeter 15); Chester 65; Durham 61 (Sunderland 11, Jarrow 11, South Shields 8); Gloucester 56 (Bristol 24, Gloucester 21); Warwick 56 (Birmingham 43); London 53 (ranging from 1 to 6 in 20 out of the 29 metropolitan boroughs). The disease is at present more deadly than it was in 1938, when incidence was higher; many factors, some extrinsic, may be responsible, but increased frequency of the more virulent starch-fermenting strains is probably the most important single factor. In Scotland notifications fell slightly from the level of the previous week, but remain greatly in excess of those recorded in the corresponding weeks of 1939 and 1938; no fewer than forty-three out of the fifty-five administrative areas were affected, notably the counties of Lanark 35, Fife 21, Dumfries 16, Renfrew 14, Clackmannan 10, and the burghs of Glasgow 139, Dundee 48, Edinburgh 34, Paisley 21, Aberdeen 19, Kirkcaldy 10. In Scotland, too, the prevailing type, as reflected in deaths, is highly virulent.

No. 48

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 30, 1940.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county) (c) Scotland (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1940					1939 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	151	10	42	—	6	27	2	12	1	—
Deaths		1	2				—	2		
Diphtheria	1,435	53	490	31	29	1,010	45	241	55	47
Deaths	39	3	13	1	2	19	—	3	1	3
Dysentery	109	—	34	4	—	50	2	41	—	—
Deaths			1	—	—			1	—	—
Encephalitis lethargica, acute	4	—	2	—	—	1	—	1	—	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever	33	1	5	6	1	13	1	2	12	—
Deaths	—	—	—	—	—	1	—	—	—	—
Erysipelas		19	64	13	5			52	9	7
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years	32	5	12	4	5	36	4	8	9	4
Deaths										
Measles	14,486	302	488‡		8	2,206	9	19		38
Deaths	14	—	3	4	—	—	—	—	—	2
Ophthalmia neonatorum	74	3	23		—	75	1	15		2
Deaths										
Pneumonia, influenzal*	675	44	16	—	4	461	31	5	—	22
Deaths (from influenza)	26	5	1	—	2	23	3	4	—	—
Pneumonia, primary			202	13				139	11	
Deaths†		55		11	7		5		4	6
Polio-encephalitis, acute	1	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	22	—	1	—	—	17	4	2	—	—
Deaths		—	—				—	1		
Puerperal fever	3	3	8	4	—	1	1	10	2	—
Deaths		—					—			
Puerperal pyrexia	109	3	6		—	156	7	12		4
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,634	86	233	48	53	1,355	31	158	65	87
Deaths	—	—	—	—	—	1	—	1	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	2,369	17	265‡		24	1,244	28	20		—
Deaths	11	—	6	2	1	5	2	2	1	1
Deaths (0-1 year)	290	22	62	24	22	311	45	61	36	17
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,740	789	608	201	117	4,673	718	581	172	135
Annual death rate (per 1,000 persons living)			12.3	13.4	10.2			11.8	11.6	11.9
Live births	4,389	340	736	280	163	4,923	637	797	335	182
Annual rate per 1,000 persons living			14.9	18.7	14.3			16.1	22.5	16.0
Stillbirths	178	8	38			257	28	40		
Rate per 1,000 total births (including stillborn)			49					48		

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Since January 1, 1940, figures for London (b) have been for all forms of pneumonia; the corresponding figures for 1939 relate to deaths from lobar pneumonia only.

‡ Notification in certain administrative areas only.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Blood-stained Semen

"J. M." writes: With reference to the notes on blood-stained semen, while in Port Elizabeth, South Africa, in 1910 I was called out to see a Kaffir who complained that he had something wrong with his penis. The hut was very dark, but a candle was found and I saw a pool of blood on the floor which would have filled a small teacup. I got him to pass water, but this was quite clear, showing that the bladder and kidneys were sound. He passed a blood cast of the urethra about four to five inches long, showing that the blood came from the urethra and was due to either chronic gonorrhoea or the congestion following too frequent coitus. Kaffirs are well known for their proneness to overmuch sexual intercourse.

Income Tax

E.M.S.—Travelling Allowance

"M.D." asks if the travelling allowance received as a part-time consultant to the E.M.S. is taxable.

*** In strictness the allowance should be excluded from the taxable receipts, and any expenses incurred in doing the work should be excluded from the professional expenses. If the latter amount is difficult to calculate (as may very well be the case where a car is used) it may be more convenient to treat the amount of allowance received as taxable and claim the whole of the appropriate travelling expenses.

Partner on Military Service—Earned Income

"T. R. S." is one of five partners. He was called up for military service in September, 1939, and his pay and family allowance are paid into the partnership pool. A locum is employed, living in "T. R. S.'s" house, the general expense of which is borne by "T. R. S." The inspector of taxes states that no "earned income relief" is due in respect of his share of the practice profits.

*** We do not think that the inspector's attitude would be supported by the authorities. Apart from the hardship which the view he takes of the position would inflict on partners on military service, "T. R. S." is presumably available for consultation from time to time on matters of importance affecting the conduct of the practice, and from that point of view may still be regarded as something more than a sleeping partner. We advise our correspondent to write to the Secretary, Board of Inland Revenue, Somerset House, W.C.2, explaining the facts and asking that the inspector of taxes may be authorized to withdraw his objection.

LETTERS, NOTES, ETC.

Closed-plaster Treatment of Wounds

"MEDICO from the Jungle" writes: The many articles written on this subject of late make one used to practising among natives smile. Surely the closed-plaster treatment is as old as the trees in the jungle. The only difference between this treatment and jungle treatment is that plaster-of-Paris is used and that greater care is taken in producing good alignment and, therefore, better functional results. In the jungle natives have used bamboo splints encased in mud or cow-dung and leaves for the closed treatment of wounds and fractures since at least 2000 B.C. Even many animals, especially the elephant, treat their own wounds in this way, or at least in a modified form, using mud and leaf-sealed dressing. Many so-called ignorant jungle medicine men were even able to produce good functional results by pulleys made from bamboo and other strips of natural fresh sapling trees. Dr. Winnett Orr certainly was a modern advocate of this treatment, but I myself saw this treatment in a modified form used in White Russian army hospitals in 1919 during the revolution. In the wards of Profs. Petroff and Alexanski for fractures and wounds one came across numerous patients in plaster; they used a modified Winnett Orr's method, leaving a window for drainage of pus, but dressings were applied at very long intervals. All their compound fractures were treated in this way.

Herpes Zoster

Dr. A. H. BARTLEY (Maltby) writes: I have been treating several cases of herpes zoster with such remarkable results that I feel this treatment will be welcomed, having met such persistent cases in the past. Briefly the treatment is this. The eruptions are painted with collodion twice daily for three days; a firm film covers the vesicles, and falls off when these dry up. I give pill cannabis indica 1/4 grain t.i.d. for a week. During this medication the pain gradually diminishes, and is much appreciated by the patient, as most analgesics, except morphine, have little effect. The most gratifying part is the good sleep at night, which is the most distressing part of the disease usually. Most of my cases have been in men who were unable to give up their work and were able to carry on with this treatment.

Hospital Infection of Wounds

Dr. BERNARD ROWLANDS writes: I wish to deal with only one source of infection in hospital. It may be possible to combat the menace of dust-borne infection in the wards by modifying their arrangement or construction. As a number of our hospitals will have to be rebuilt before long the subject of improved construction and arrangement is well worth careful thought now. I suggest the transfer of patients from one section of a suitably constructed ward to another section during sweeping and bed-making. A dustproof drop-curtain would then operate to cut off the area in which the patients would then be lying. In some hospitals it would be possible to wheel the vacated beds to a special room for the purpose of re-making them. I hope that when the rebuilding of our hospitals is taken in hand our surgeons will put forward any ideas they may have formed on this subject.

The Mother's Share in Family Allowances

THE CHAIRMAN of the Six Point Group (Miss Dorothy Evans) writes: No doubt many of your readers have studied with interest the pamphlet, *An Aylesbury Broadside*, issued by the *Lancet*, putting forward a proposal for family allowances. My committee hails with approval a scheme from such an influential quarter to remedy a situation which we have long deplored—namely, that the nation's mothers have to carry out in the majority of homes their task of citizen-building without the necessary materials. Moreover, they are called upon to do a great variety of jobs—cooking, catering, cleaning, sick nursing, sewing, infant education, household decoration and repairs of many kinds—and all these without any cash remuneration whatever, as the pamphlet rightly points out. The scheme put forward, while providing for an allowance from the State to the mother in respect of each child if the family income falls below subsistence level, does not tackle the question of the mother's own nutriment, or provide for any small allowance of spending money for her very own, apart from sums which she administers for others. A diagram is given illustrating the proportions spent on various items in a sample budget. There is an item—the husband's pocket money—illustrated by a drawing of a man enjoying a smoke. There is no item the wife's pocket money—nor is she depicted in the act of indulging in any personal gratification. I write in the hope that a scheme of family allowances sponsored by the medical profession will include not only an allowance to the mother wherewith she can feed and clothe her child if the family income is not adequate, but an allowance to the mother or guardian whose time is spent on the tasks necessary for the adequate nurture of the child. The scheme will not achieve the physical improvement hoped for unless this is done. The mother during the nursing stage must have increased nourishment beyond the needs of an ordinary adult. If this is denied and she goes short, as the reports on malnutrition all show that she does, during the arduous years of her childbearing, her offspring will inevitably be under par.

Chocolate in Wartime

Mesrs. Cadbury of Bournville send us at the end of each year samples of their products, and, although some of the raw materials used in the manufacture of chocolate are now rationed and Government contracts have to be met, the pleasant custom was continued in 1940, and the usual standard of quality maintained.